



Final Revision

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✱ (1) Write the scientific term :

- 1) It is an electric current with constant intensity and flows in one direction through the electric circuit. (.....)
- 2) They are ductless glands that secrete their hormones directly in the blood. (.....)
- 3) The hereditary trait that appear in all individuals of the first generation in Mendel's experiments. (.....)
- 4) Flowing of the negative charges (electrons) in a conductor. (.....)
- 5) A chemical process which decreases oxygen percentage in the substance (.....)
- 6) Used in some electric circuits to control current intensity as the resistance directly proportional with the length of wire. (.....)
- 7) The opposition that the electric current faces during its flow in the conductor. (.....)
- 8) The change in the concentration of the reactants and the products in a unit time. (.....)
- 9) A chemical message that controls and regulates activities and functions of most of the body organs. (.....)
- 10) It is the quantity of electricity in coulomb or the electric charges flowing through a cross-section of the conductor in one second . (.....)
- 11) The enzyme which is found in sweet potato and accelerates the decomposition rate of hydrogen peroxide (.....)
- 12) The metallic can exists in most modern cars to treat the harmful gases emitted from the engine. (.....)
- 13) The charge transferred by a constant current of intensity of one ampere in one second. (.....)
- 14) A substance which changes the rate of chemical reaction without being changed. (.....)
- 15) They are chemical substance produced by the body of living organism act as catalysts that increase the speed of biological reactions. (.....)
- 16) The measuring unit for absorbed nuclear radiation. (.....)

- 17) The breaking up of bonds in reactants molecules and formation of a new bonds in the products molecules in the reaction. (.....)
- 18) It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor (.....)
- 19) The hereditary traits are not be transmitted from one generation the another. (.....)
- 20) The reaction between an acid and an alkali to give salt and water (.....)
- 21) The resistance of a conductor which allows passing of an electric current intensity of one ampere when the potential difference across its terminals is one volt. (.....)
- 22) The cells which the hormones affect and they are almost located away from the endocrine gland that secretes hormone. (.....)
- 23) A disease caused as a result of decreasing the secretion of the growth hormone at the childhood (.....)
- 24) Trait that disappeared in the first generation. (.....)
- 25) The individual who carries a similar pair of hereditary genes whether the genetic pair is dominant or recessive (.....)
- 26) The science that researches in the similarities and difference between the individuals in the same species (.....)
- 27) The hormone which is responsible for the appearance of the male secondary sex characteristics (.....)
- 28) It is the state of an electric conductor that shows the transfer of the electricity from or to it, when it is connected to another conductor. (.....)
- 29) An arrangement of the metals elements in a descending order according to their chemical activity. (.....)
- 30) The potential difference between the two poles of the battery when the electric circuit is open. (.....)
- 31) The hormone which secreted from the pituitary gland to controls the speed rate of growth of muscles and bones. (.....)
- 32) The individual who carries two genetic factors one of the dominant trait and the other of the recessive trait. (.....)
- 33) Organs secrete hormones directly in the blood stream. (.....)
- 34) The flow of electric negative charges through a conducting material. (.....)
- 35) Chemical reactions in which an element substitutes another one. (.....)

- 36) The appearance of a hereditary trait in the individuals of the first generation when two individuals are crossed over, one of them carries a pure trait contrasting the trait carried by the other individual (.....)
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- 37) A chemical substance that controls and regulates the functions of the most body organs. (.....)
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- 38) A disease that occurs due to the increase in the secretion of the thyroxin hormone. (.....)
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- 39) They are parts of DNA on the chromosomes and control the hereditary traits of the individual. (.....)
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- 40) A chemical process which increase oxygen percentage in the substance. (.....)
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- 41) Through which the hereditary traits are transmitted from parents to offspring. (.....)
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- 42) Chemical reactions in which a catalyst speeds up their rate. (.....)
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- 43) It is a reaction where double substitution occurs between the ions of two compounds to form two new compounds. (.....)
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- 44) The substance which loses one or more electrons in a chemical reaction. (.....)
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- 45) The type of the chemical reaction which involves the breaking up of the compound into simple elements by the effect of heat (.....)
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- 46) The process of spontaneous decaying of atoms nuclei of some radioactive elements that are present in nature. (.....)
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- 47) The electric current that is produced from convert mechanical energy into electric energy by means of the dynamo. (.....)
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- 48) The result when one of the endocrine glands does not work properly. (.....)
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- 49) Chemical compound which is resulted from the reaction of acid with alkali. (.....)
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- 50) Hormone is responsible for female secondary sex character. (.....)
-
- 51) A chemical process in which the atom loses an electron or more. (.....)
-
- 52) The trait that appears in all individuals of the first generation in Mendel's experiment. (.....)
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- 53) A device that is used to measure the electromotive force (.....)

*(2) Choose the right answer:

1. Direct current can be produced from

- a. electrochemical cells. b. electric generators. c. electric power stations.

2. The reaction of oil with caustic soda is one of the reactions.

- a. very fast b. relatively slow c. very slow

3. A hormone called stimulates the release of stored sugar from the liver.

- a. estrogen b. glucagon c. insulin

4. On heating red mercuric oxide, it decomposes into

- a. oxygen. b. mercury. c. oxygen and mercury. d. no correct answer.

5. At the beginning of the reaction the percentage of the reactants concentration equal

- a. 100% b. 0% c. 50% d. no correct answer

6. The mathematical relation of the Ohm's law is

- a. $R = \frac{V}{I}$ b. $I = \frac{R}{V}$ c. $R = I \times V$ d. no correct answer

7. Four similar electric cells, are connected in series each one has e.m.f. of 1.5 volt, so the total e.m.f. equalvolt.

- a. 3 b. 6 c. 1.5 d. 12

8. Measuring unit of the quantity of electricity is

- a. ampere. b. coulomb. c. volt. d. joule.

9. hormone, liberates the energy necessary for the body from food.

- a. Growth b. Estrogen c. Thyroxin d. Progesterone

10. At the end of the chemical reaction, the concentration of the reactants is

- a. zero % b. 25% c. 50% d. 100%

11. Substance which change rate of the reaction without being changed is

- a. oxidizing agent. b. active agent. c. catalyst. d. reducing agent.

12. When added copper filings to diluted hydrochloric acid,

- a. copper oxide is formed. b. copper chloride is formed.
c. hydrogen gas is formed. d. no chemical reaction occurs.

13. The hormone that controls the calcium levels in the blood is hormone.

- a. calcitonin b. adrenalin c. estrogen d. insulin

14. From the properties of direct current is

- a. change intensity. b. change direction.
c. constant intensity and direction. d. change intensity and direction.

15. The hormone that promotes the growth of endometrium is thehormone.

- a. testosterone b. progesterone c. estrogen d. growth

16. All the following elements replace hydrogen of the diluted acid except

- a. Al b. Zn c. Au d. Sn

17. Calcitonin hormone controls level in the blood.

- a. potassium b. oxygen c. calcium d. iron

18. When magnesium replaces copper in a solution of one of its salts, a precipitate is formed.

- a. black b. green c. red d. blue

19. The two factors of a hereditary trait are similar in the individual.

- a. pure b. hybrid c. recessive d. (a) and (c) together

20. Oxidization is a chemical process which increases percentage in substance.

- a. hydrogen b. oxygen c. helium d. fluorine

21. The use of the sliding rheostats is of the electrical circuits.

- a. change resistance
b. measurement of current intensity
c. measurement of the electric potential difference
d. measurement of electromotive force

22. The increase in the concentration of the reactants during the chemical reaction, the in the number of collisions between molecules.

- a. decreases b. increases c. equal

23. A reaction between an acid and an alkali to form salt and water is reaction.

- a. reduction b. neutralization c. simple substitution

24. The scientists discovered the means of how the gene controls the appearance of a hereditary trait.

- a. Watson and Crick b. Badel and Tatum c. Aly Mostafa and Becquerel

25. On connecting 5 electric cells have the same electromotive force on parallel, the e.m.f of each cell is 2.5 volts, so the total e.m.f equalsvolts.

- a. 2.5 b. 5 c. 7.5 d. 12.5

26. Mendel covered of the pistils of a pea plant, to avoid cross pollination.

- a. sepals b. stigmas c. stamens d. petals

27. Ohmmeter is a device used to measure

- a. potential difference. b. electric intensity.
c. electric resistance. d. quantity of electricity.

28. Sodium replaces the following metals in their salt solutions except for

- a. copper. b. potassium. c. magnesium. d. zinc.

29. Mendel covered of a pea plant to avoid cross pollination.

- a. stamens b. stigmas c. sepals d. petals

30. Sweet potato includes oxidase enzyme which helps in decomposition offaster.

- a. hydrogen chloride b. sodium chloride
c. hydrogen peroxide d. sodium carbonate

31. The measuring unit for absorbed nuclear radiation is the

- a. Joule. b. Sievert. c. Coulomb. d. Ampere.

32. The is one example of electrochemical cells.

- a. dynamo b. dry cell c. rheostat d. voltmeter

33. From the dominant traits in human being

- a. straight hair. b. wide eyes.
c. absence of dimples. d. attached ear lobe.

34. Air bag contains sodium

- a. sulphate. b. azid. c. oxide. d. carbonate

35. All the following are considered reduction process except

- a. gaining hydrogen. b. losing oxygen. c. gaining electrons. d. losing electrons.

36. Electric resistance is 20 ohms, if the current intensity passing through it is doubled its value becomes ohms.

- a. 10 b. 20 c. 30 d. 40

37. The genetic structure of gametes of pea plant of wrinkled and yellow seeds

- a. yyRR. b. YYrr. c. yyrr. d. YYRR.

38. When Copper Sulphate is heated, a deposit

- a. black. b. green. c. blue. d. reddish.

39. Which of the following the dominant trait of the human

- a. straight hair. b. narrow eyes. c. no freckles. d. attached ear lobes.

40. All following are from factors that affect of the rate chemical reaction except

- a. concentration of reactants. b. nature of the reactants.
c. nature of the products. d. temperature of the reaction.

41. If a pollination takes place between 2 hybrid individual the..product is 60 individual, so the number of produced hybrid individuals may be individual.

- a. 15 b. 50 c. 30 d. 10

42. The hormone that is responsible for the appearance of male secondary sex characteristics is the hormone.

- a. insulin b. progesterone c. testosterone d. adrenaline

43. The ratio between the potential difference across two ends of a conductor and the electric current intensity passing through it is equal to

- a. electromotive force. b. work done.
c. quantity of electricity. d. electric resistance.

44. If mating occurs between two individuals, both of them are hybrid and 200 members resulted from this mating, then the hybrid members produced may be.....individual.

- a. 50 b. 100 c. 150 d. 200

72. The is the only way for hormones to reach the target cells.

- a. saliva b. blood c. water d. ducts

73. Generating an alternating electric current is by using the

- a. rheostat. b. dynamo. c. dry cell. d. voltmeter.

74. All the following metals replace hydrogen of acid except

- a. potassium. b. magnesium. c. silver. d. zinc.

75. From compounds which are decomposed by heat into metal and oxygen is

- a. $\text{Cu}(\text{OH})_2$ b. CaSO_4 c. CuCO_3 d. HgO

76. From the dominant traits in the human being is the trait.

- a. straight hair b. wide eyes
c. absence of dimples in the face d. presence of freckles in the face

77. According to Mendel's second law, each pair of the alternative traits is inherited independently of the others and appears in the second generation at a ratio of

- a. 1 : 1 b. 2: 1 c. 3 : 1 d. 4: 1

78. Carbon dioxide evolves during thermal decomposition of compound.

- a. HgO b. CuSO_4 c. CuCO_3 d. $\text{Cu}(\text{OH})_2$

79. The ratio between the potential difference across two ends of a conductor and the electric current intensity passing through it is equal to

- a. e.m.f. b. electric current.
c. quantity of electricity. d. electric resistance.

80. Double substitution reactions between salt solutions are accompanied by formation of

- a. metal. b. a precipitate. c. an oxide. d. a non-metal.

81. The nuclear energy is peacefully used in the industrial field to convert sand to for manufacturing computer processors.

- a. electric energy b. silicon sheets c. nuclear fuel d. atomic bombs

82. The scientists discovered the means of how the gene controls the appearance of the hereditary trait.

- a. Mendel and Newton c. Johansen & Mendel
b. Watson and Crick d. Badel and Tatum

83. On adding silver nitrate solution to sodium chloride solution, is formed.

- a. a white precipitate of sodium nitrate b. a white precipitate of silver chloride
c. a blue precipitate of silver chloride d. no precipitate

84. When hydrochloric acid reacts with sodium carbonate, then the reaction produces gas which

- a. turbid limewater. c. increases ignition.
b. burns with pop sound. d. its color is red brown.

***(3) Complete the following :**

1. $Zn + 2HCl \rightarrow \dots + \dots$
2. The ability to roll the tongue is one of the traits, while the attached ear lobe is one the traits in the human.
3. The pea plant is characterized by it can be easily and its short life cycle.
4. The hormone controls speed of growth rate of body muscles and bones is hormone.
5. The effects of radiation is a result of changing in the sex chromosomes composition of the cell.
6. In human, the traits of the blue narrow eyes are considered as hereditary traits.
7. The..... apparatus is used to measure the electromotive force of a battery in unit known as
8. The is considered a part of DNA which consists of smaller structural units called
9. The current can be transferred for short distances only, while the current can be transferred for short and long distances.
10. During reaction, the compound is decomposed by heat into its simple components, and in the reaction a metal substitutes another one in its salt solution.
11. The electric current is used in electroplating, while the electric current is used in lighting streets and operating electric appliances.
12. During Mendel's experiments, he removed the stamens from the flowers before they become mature to prevent pollination, and he covered stigmas flowers to prevent pollination.
13. The is used to measure the potential difference.
14. $Na_2CO_3 + \dots \rightarrow 2NaCl + H_2O + CO_2$
15. Thyroid gland secretes two hormones and
16. The curly hair trait dominates the straight hair trait that follow principal in the human being.
- 17..... is the project concerned with effect of different mutations on work of genes.
18. The reactions of covalent compounds are slower because they take place between
19. Genes are DNA parts present on

20. If the secretion of the growth hormone decreases at the childhood, the human suffers from
21. Every hereditary trait is controlled by two hereditary factors, the two hereditary factors in every trait separate when the are formed.
22. The hormone liberates the needed energy from the food stuff.
23. The measuring unit for absorbed nuclear radiation is
24. Sweet potato contains enzyme which helps in decomposition of hydrogen peroxide.
25. The measuring unit of work is, whereas the measuring unit of amount of electricity is
26. Reaction between an acid and an alkali forms and
27. During the chemical reaction, the concentration of reactants gradually, whereas the concentration of products gradually
28. An instrument called is used to measure the electric current intensity, whereas the electric resistance is measured by an instrument called
29. The speed of chemical reaction can be measured by the rate of appearance of one of substances.
30. To respond to emergencies adrenal gland secretes hormone.
31. When four cells are connected in a parallel way and the e.m.f for each one 1.5 volt. The e.m.f for the battery = volt.
32. When the amount of iodine in food decreases, the secretion of hormone decreases from gland.
33. Natural elements like rubidium, the atom's nuclei of these element contain a number of more than the number required for its stability.
34. The electric current produced from electrochemical cells is current.
35. The breaking up of bonds in the molecules of reactants and the formation of new bonds in the molecules of product is called
36. The compound decomposes by heat into its simple components in reactions.
37. They are parts of DNA present on the chromosomes and control the hereditary traits of the individual is known as

38. The voltmeter is connected to the electric circuits in and ammeter is connected in
39. Hormone controls the calcium levels in the blood, while hormone promotes the growth of endometrium.
40. In the reaction of sodium with chlorine to form sodium chloride, is considered as an oxidizing agent, and is considered as a reducing agent.
41. Some traits are transmitted from one generation to another they are called and some traits are not transmitted from one generation to another they are called
42. The is used to measure the electromotive force of a battery.
43. The chromosome is chemically consists of a nucleic acid called combined with
44. gas evolves when sodium reacts with water, while gas evolves on heating blue copper sulphate.
45. The sources of nuclear radiation pollution are divided into and
46. Electric current intensity is proportional to potential difference between two terminals of a conductor at a constant temperature.
47. The electric resistance measured with device, and its unit of measure is
48. Each hereditary traits controlled with , separated when are formed.
49. Nitrogen pentoxide breaks up into gas and gas.
50. The electric current is generated from a dynamo due to converting energy to energy.
51. The reaction of covalent compounds are than of the ionic compounds.
52. Increase of secretion in the growth hormone at the childhood cause disease.
53. The traits that are transmitted from one generation to another is the
54. Chemical reaction is in the reactant molecules, and in the products molecules.
55. Most metals decompose to and sulphur trioxide.
56. The is used to measure the electromotive force of the battery in measuring unit is called
57. When magnesium replaces copper in its salt solution a precipitate its color is is formed.

58. When glucose level is increased in blood, the pancreas secretes hormone.
59. When the amount of glucose decreases in the blood, pancreas secretes hormone.
60. Transmission of electric charges depends on the between two conductors.
61. hormone is responsible for female secondary sex character.
62. The traits that are not transmitted from one generation to another are called traits.
63. is from the examples of electrochemical cells.
64. The chemical energy is converted into electric energy by cells.
65. Neutralization it is the reaction between an acid and an alkali forming and
66. During the chemical reaction, the concentration of decreases, while the concentration of increases by the time.
67. The resistance of a conductor that (1) ampere is passed through it when the potential difference between its terminal is (1) volt =
68. Carbon dioxide gas detected by changes into turbid.
69. In the beginning of the reaction, the concentration of the reactants is %
70. The scientist is the founder of heredity.
71. The instrument which is used to measure the electric potential difference is
72. Sodium metal reacts with water producing sodium hydroxide and gas evolves.
73. Every hereditary trait is controlled by two hereditary factors which separate during formation of the
74. The curly hair trait dominates over the straight hair trait is follows the principle of in human being.
75. Some reactions are very slow and need several months to take place, such as the formation of
76. The project is interested in the effect of the various mutations on the function of the genes.

✱(4) **Correct the underlined words:**

1	Most metal carbonates decompose by heat to metal oxide and <u>nitrogen</u> gas evolves.	.....
2	The reactions of ionic compounds are <u>slower</u> than those of the covalent compounds	.....
3	<u>Estrogen</u> promotes the growth of endometrium	.....
4	<u>Ohm</u> is the measuring unit for absorbed nuclear radiation.	.....
5	Alternating current is characterized by <u>constant</u> intensity and direction	.....
6	<u>Oxidation</u> is a chemical process in which an atom gains one electron or more.	.....
7	In <u>positive catalysts</u> reaction, catalyst is used to slow down the chemical reaction.	.....
8	The <u>attached</u> ear lobe from dominant hereditary trait.	.....
9	In the dry cell the <u>magnetic</u> energy change to electric energy	.....
10	Mendel removed the <u>petals</u> of pea flowers to prevent self-pollination.	.....
11	The <u>acquired</u> traits are transmitted from one generation to another	.....
12	Genes are parts of DNA found in the <u>cytoplasm</u> of the cell.	.....
13	The <u>Ammeter</u> is connected in parallel in the electric circuit.	.....
14	On fearing and anger, the secretion of <u>thyroxin</u> hormone increases.	.....
15	Some chemical reaction are very slow, because it may takes million of years to occur such as the formation of the <u>iron rust</u>	.....
16	Mendel chose <u>ten</u> hereditary traits in the pea plant to perform his experiments	.....
17	By using 3gm of catalyst in an experiment. Its mass after finishing the reaction is <u>less than</u> 3 gm	.....
18	Rate of reaction of the dilute hydrochloric acid with iron filling is <u>slower</u> than that with the same mass of a piece of iron	.....
19	Dwarfism disease results from decrease of secretion in the <u>insulin</u> hormone at the childhood	.....
20	The measuring unit of the electromotive forces for the electric cell is <u>ampere</u>	.....
21	<u>The iron rust</u> is a fast chemical reaction	.....

22	The chemical energy can be converted to electrical energy by using the electric generator (dynamo).	.....
23	Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas	.....
24	Hormones are secreted in the body by some organs called ductile glands	.....
25	The estrogen hormone liberates the needed energy from the food stuff	.....
26	The reactions of the covalent compounds are fast	.....
27	Most metal carbonates decompose by heating into metal and carbon dioxide.	.....
28	The reactions which take place inside the Earth to form iron rust may take millions of years.	.....
29	Current intensity is the state of an electric conductor that shows the transfer of electricity from or to it, when it is connected to another conductor.	.....
30	When the blood sugar level decreases, the pancreas secrete the hormone insulin.	.....
31	On adding piece of magnesium to copper sulphate solution black precipitates is formed.	.....
32	Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas.	.....
33	On decreasing of sugar level in the blood, the liver responds by secreting glucagon hormone.	.....
34	The ionic compounds are fast in their reactions, because they decompose into molecules that easily share in the reaction.	.....
35	When we add silver nitrate solution to sodium chloride solution, a black precipitate is formed	.....
36	The electromotive force of three similar cells connected in parallel is twice the electromotive force of one cell.	.....
37	Mercuric oxide is silvery colour	.....
38	The radioactivity phenomenon was discovered by the scientist George Simon	.....
39	Rate of chemical reaction depends on the concentration of the products	.....
40	The electric current that produced from the dynamo flows in one direction.	.....
41	Each chromosome produce a special enzyme which is responsible for producing a type of protein.	.....
42	The nuclei of radioactive elements contain number of protons more than the number required for its stability	.....
43	The estrogen hormone is secreted on increasing percentage of glucose sugar in the blood.	.....

44	Voltmeter is connected in the electric circuit in series	.....
45	Ohmmeter is used to measure the current intensity.	.....
46	The glucagon hormone controls the calcium levels in the blood.	.....
47	The nucleus of each cell carry a complete group of hormones which is responsible for appear the hereditary traits in living organisms.	.....
48	Rate (speed) of chemical reaction is increased by decreasing the temperature.	.....
49	When we add silver nitrate solution to sodium chloride solution a white precipitate is formed of sodium nitrate.	.....
50	The catalyst is the substance which loses one or more electrons during the chemical reaction.	.....
51	Watson and Creek scientists discovered the means of how gene controls the appearance of a trait.	.....
52	When pancreas stops secreting insulin hormone, the level of glucose sugar decreases in the blood.	.....
53	The increase of growth hormone secretion in the childhood causes dwarfism.	.....
54	Chromosome is chemically consists of nucleic acid DNA is bind with fats.	.....
55	Oxygen gas detected by changes limewater into turbid.	.....
56	Iron element participates in the composition of thyroxin hormone.	.....
57	From uses of nuclear energy in medical field eliminate pests and improve some plants races.	.....
58	Ammeter apparatus is used to measure electric potential difference.	.....
59	The two scientists Padel & Tatum made a model for DNA molecule.	.....
60	In the circuit of the direct current, molecules flow from one of the two poles to the other in the electrochemical cell.	.....
61	The unit of measuring the electric charges is volt.	.....

***(5) Give reason for:**

1. Some people suffer from simple goiter.

.....

2. Copper doesn't react with dilute hydrochloric acid whereas zinc reacts with it.

.....

3. The rate of chemical reaction increases by increasing concentration of reactants.

.....

4. A red precipitate is formed when magnesium is added to copper sulphate solution.

.....

5. Mendel covered the stigmas of the pistils of pea flowers during studying the hereditary traits.

.....

6. Mendel choose the garden pea plant to conduct his experiments.

.....

7. Learning to walk in children is not considered a genetic trait.

.....

8. Adding a piece of sweet potato enhances the decomposition of the hydrogen peroxide.

.....

9. A white precipitate is formed on adding silver nitrate solution to sodium chloride solution.

.....

10. Blood stream is the only way for hormones to reach their sites of action.

.....

11. Charging the mobile phone requires electric transformer.

.....

12. Reaction between covalent compound are slow, whereas reaction between Ionic compounds are fast.

.....

13. Diluted Hydrochloric acid does not react with the copper.

.....

14. The fridge is used to preserve food.

.....

15. Reactions between ionic compounds are fast whereas reactions between covalent compounds are slow.

.....

16. Pancreas is a dual functional gland (has two functions).

.....

17. Sodium is from the reducing agents while chlorine is from the oxidizing agents.

.....

18. The ability to roll the tongue is one of the dominant traits in the human being.
.....
19. Nuclear radiation has genetic effects.
.....
20. The free ear lobe trait dominates the attached ear lobe trait.
.....
21. Rheostat is used in some electric circuits
.....
22. The pituitary gland is called the master gland.
.....
23. Uranium element is considered from radioactive elements.
.....
24. Blood is the only way for the hormone to reach its site of action (target cells).
.....
25. A continuous growth in the limbs' bones of some persons so the person becomes a giant.
.....
26. The combustion of steel scours used for cleaning aluminum in jar contains oxygen is faster than its combustion in the air.
.....
27. Mendel removed the stamens from the flowers of pea plant during his experiments.
.....
28. It is preferred to use alternating current more than direct current.
.....
29. Food preservation in the freezer of the refrigerator.
.....
30. Some electric circuits contain variable resistance.
.....
31. The rate of the reaction of hydrochloric acid with the iron filings is faster than that with a piece of iron of the same mass.
.....
.....
32. A gas evolves on putting a piece of aluminum in diluted hydrochloric acid .
.....
33. Speed of chemical reaction increases with rise in temperature.
.....
34. When a yellow pod pea plant is pollinated with a pure green pod pea plant, they produce plants that are all with green pods.
.....

35. Some people who depend mainly on eating rice have deficiency in vitamin (A).
.....

36. Although aluminum comes before zinc in chemical activity series, but it takes a longer time to react with hydrochloric acid practically.
.....

37. Some electric cells are connected in the electric circuit in series.
.....

38. The voltmeter is connected between the two poles of battery.
.....

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***(6) What happen if:**

1. Decrease the amount of growth hormone in the childhood.
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2. Heating red mercuric oxide HgO.
.....
3. The human body expose to a large dosage of nuclear radiation for a short time
.....
4. Putting a piece of magnesium in copper sulphate solution.
.....
5. Ammeter and voltmeter readings used in verifying Ohm's law if the resistance is burnt.
.....
6. Add a small piece of sodium metal to water.
.....
7. Increase in the concentration of the reactants. (According to the speed of the chemical reaction).
.....
8. When the radiation affects on the human body cellular effects.
.....
9. When the individual carries a recessive gene from both parents
.....
10. The body cells can't use glucose sugar from the blood.
.....
11. Adding manganese dioxide to a test tube containing hydrogen peroxide.
.....
12. Replacing a piece of iron with iron filings has the same mass on reacting with diluted acids.
.....
13. Heating green copper carbonate.
.....
14. Adding silver nitrate solution to sodium chloride solution.
.....
15. Pancreas stopped secreting glucagon hormone.
.....
16. Two charged conductors connected with each other one of them has higher electric potential from the other.
.....
17. Mating between two pure individuals differ in two pairs or more of contrasting traits.
.....

18. Cross-pollination between two pure pea plants, one with yellow pod and the other with green pod.
.....
19. When the gene fails to produce its own enzyme.
.....
20. To the number of collisions when adding a negative catalyst to a chemical reaction.
.....
21. To the colour of red mercuric oxide when it is heated.
.....
22. Adding hydrochloric acid to sodium carbonate salt. (Without writing equation).
.....
23. Touching two conductors (A) and (B) where the electric potential of conductor (A) is higher than the electric potential of conductor (B).
.....
24. Changing the chemical composition of hemoglobin.
.....
25. Mating between two pure individuals which are different in a pair of contrasting traits.
.....
26. When iodine salts decrease in water and food of man.
.....
27. The atom's nucleus of an element contains a number of neutrons more than the number required for its stability.
.....
28. Increasing surface area according to the reactants.
.....
29. Exposure of red blood cells which contain hemoglobin to the nuclear radiation.
.....
30. Decreasing the activity of pituitary gland in the body
.....
31. Human body is exposed to a large dosage of radiation for a short time.
.....
32. Putting two effervescent tablets in two similar beakers, one of them contains cold water and the other contains hot water.
.....
33. Touching two charged conductors by a conducting bar, the first conductor has an electric potential is equal to the electric potential of the second one.
.....

34. The length of the sliding rheostat wire increase in circuit "to the electric current intensity".
.....
35. Heating blue copper hydroxide.
.....
36. Pancreas does not secrete glucagon hormone.
.....
37. Adding a negative catalyst to rapid reaction.
.....
38. Heating of sodium nitrate.
.....
39. If the length of the rheostat wire increases (Related to the electric current intensity).
.....
40. A substance gains an electron or more during a chemical reaction.
.....
41. The stigma of the flower of pea plant uncovered during the study of the inherited traits .
.....
42. Two conductors having the same electric potential are connected together by a wire.
.....
43. The atom nucleus of an element contains a number of neutrons more than the number required for its stability.
.....
44. You keep food outside the refrigerator for a long time.
.....
45. Two charged conductors touch and the electric potential of one conductor is 10 volt but the electric potential of the other conductor is 30 volt.
.....
46. Two pure individuals bearing two pairs of contrasting traits are crossed.
.....
47. When the dominant gene exists with another for the same characteristic.
.....
48. the number of collisions when the temperature of the reaction is raised up.
.....
49. When manganese dioxide (MnO_2) is added in a test tube that contains hydrogen peroxide.
.....
50. If there is a mating between two individuals resulting in producing 50% dominant individuals and 50% recessive individuals.
.....

***(7) Define :**

1. The principle of complete dominance.

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2. Mendel's first law.

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3. Thyroxin hormone.

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4. Adrenalin hormone.

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5. Ohm's law.

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6. Neutralization reaction.

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7. Chemical reaction.

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8. The series of chemical activity

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9. Radioactivity

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10. Genes.

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11. Hormones.

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12. The ampere.

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13. Catalyst.

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14. Mendel's second law.

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15. The electric potential of conductor.

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16. The human genome.

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5

You have 4 similar electric cells, the electromotive force of each one is 1.5 volt, illustrate by drawing only how you connect them to get batteries of e.m.f of 3 volt in two ways.

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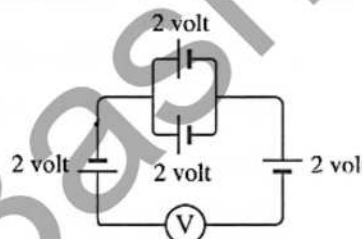
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6

From the opposite diagram :

1. The voltmeter reading = volt.
2. If connect all electric cells in series, the reading of voltmeter is volt.



7

In the following reaction : $2\text{Na} + \text{Cl}_2 \longrightarrow 2\text{NaCl}$

Write the meant by each of the following :

1. Oxidation process.
2. Reduction process.
3. Oxidizing agent.
4. Reducing agent.

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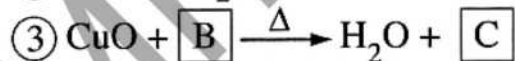
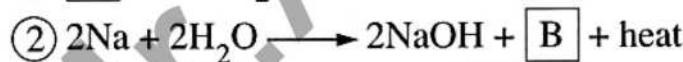
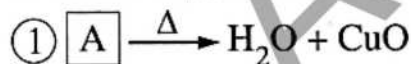
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8

From the opposite reaction :



1. Write chemical formula for $\boxed{\text{A}}$ $\boxed{\text{B}}$ $\boxed{\text{C}}$
2. What is the type of reaction in ①, ②, ③?
3. What is the name of chemical process which appears to black copper oxide in reaction ③?

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9

If crossing takes place between two pea plants, one is pure white flowers, and the other is pure red flower, explain on genetic bases the result of the crossing of the first generation only, not that the red gene color is symbolized by (R) and the white gene color is symbolized by (r).

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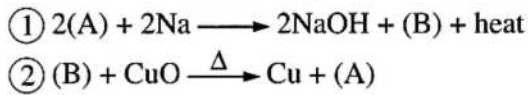
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10

From the following two equations answer the following :



1. Write the chemical formula for the (A) & (B) substances.
2. How to detect the substance (B) ?
3. What is the type of reaction No. ①, and what is the type of reaction No. ② ?

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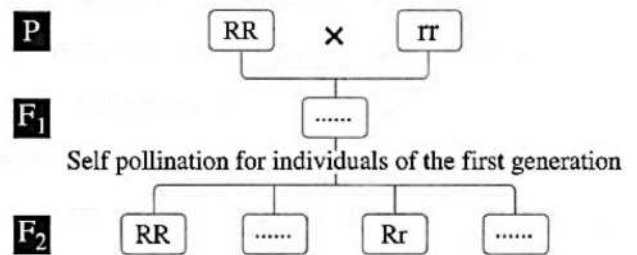
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11

The opposite figure illustrates a cross-pollination :
between a pea plant with red flowers
and another pea plant with white flowers :

1. Determine by symbols the individuals of the first generation.
2. Fill in gaps the second generation.
3. Is the results verify Mendel's first law ?
State your reason.



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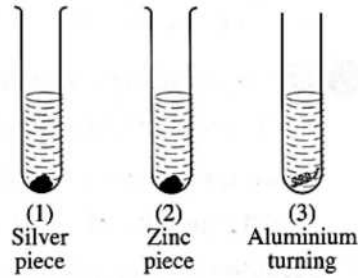
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12

On adding suitable equal amounts of diluted hydrochloric acid to each of the represented tubes (1, 2, 3) in the figure, explain the following :



1. Non occurrence of reaction in tube (1).
2. Delaying the beginning of the reaction in tube (3) than tube (2) although aluminium is more active than zinc.
3. What happens to the rate of the reaction when a zinc piece in tube (2) is converted into small pieces or zinc powder, and why?
4. What is the name of the gas evolved during the reaction?

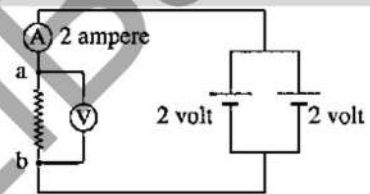
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13

From the opposite circuit, find the work done required to transfer a quantity of electric charge between points (a) and (b) through 5 minutes if the electromotive force of each cell is two volts and the reading of the ammeter is two amperes.



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14

The hybridization in the *Drosophila* between a male and a female, both of them are long wings and the product is 27 members with long wings and 9 members with short wings. Explain that on genetic bases (If the long wing is T and short wing is t).

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15

Resistive electrical conductor of 1100 ohms connected to a voltage source of 110 volts. Calculate the amount of electricity passing by 10 minutes.

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16

You have three identical electric cells and the e.m.f. of each is 1.5 volts , illustrate by drawing only how you can connect them to get a battery of e.m.f. equals:

1. (4.5) volts
2. (3) volts

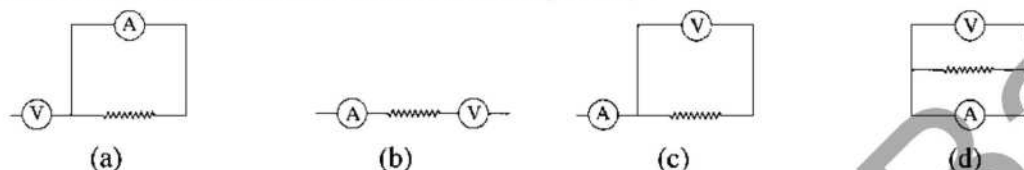
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17

Which one of the following figures represents a part of an electric circuit that contains an ammeter and a voltmeter connected in right way ?



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18

Choose from column (B) and (C) what suit with column (A) then write the complete statement.

(A) Reaction occurs	(B) Gas produced	(C) How can you detect the produced gas ?
1. Sodium carbonate with diluted hydrochloric acid.	(1) H ₂	a. Increases the glowing of the match stick.
2. Sodium with water.	(2) O ₂	b. Turbid clear limewater.
3. Heating sodium nitrate.	(3) SO ₃	c. Burning with a pop sound.
	(4) CO ₂	d. Form white fumes with ammonia.

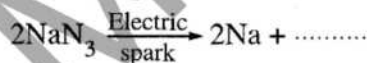
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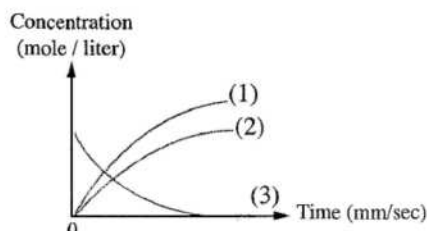
19

The opposite graph represents the rate of rapid decomposition of the substance of sodium azid.

(which is present inside the air bag)



1. Complete the equation.
2. From the graph, write the name of compound indicated by each number.
3. Mention the importance of air bag.



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20

If the potential difference between the terminals of a conductor is (6) volts, and the electric current of intensity (0.5) ampere is passed through it, Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of (12) volt

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21

Use the following symbols (TtAa) and (taa) to express the results from the pollination between hybrid long-stemmed, red flower pea plant with another pure short-stemmed, white flower pea plant showing (parents, gametes and first generation).

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22

Calculate the work done to transfer an electric charge of (20 coulomb) through cross section of a conductor, if the potential difference between its terminals is (50 Volt).

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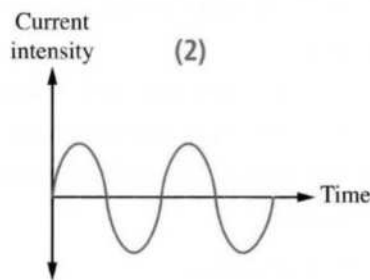
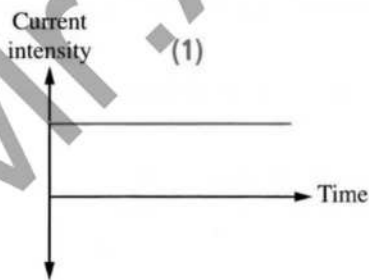
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23

Study the following two figure (1) and (2), then complete the spaces by suitable words :

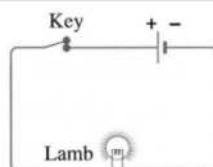


1. Figure (1) represents electric current that produced from which changes energy into electric energy.
2. Figure (2) represents electric current the produced by which changes energy into electric energy.

24

The given figure represent electric lamp its filament can't carry current more than (1.5 ampere).

When the circuit closed a charge of (42) coulomb pass through its filament in half minute.



Explain by calculation if its filament burn or not ? and Why ?

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25

From the following table choose a statement from column (B) and another one from column (C) to be suitable for the items in column (A) and write a complete statement.

(A)	(B)	(C) Type of reaction
1. NaNO_3	a. decomposed by heat	e. Salt is formed and hydrogen gas evolves.
2. Al	b. replace the hydrogen in water	f. When it reacts with silver chloride.
	c. is formed in the form of white precipitate	g. Produce yellowish white substance and oxygen.
	d. replace the hydrogen of the acid after a while.	h. Oxide is formed and oxygen evolves.

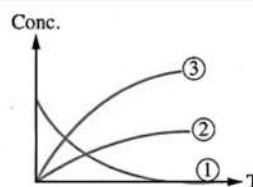
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26

The opposite graph represents the breaking up of N_2O_5 with time :

- Write the balanced symbolic equation of this reaction.
- Replace the numbers on the figure by suitable substances from the equation.



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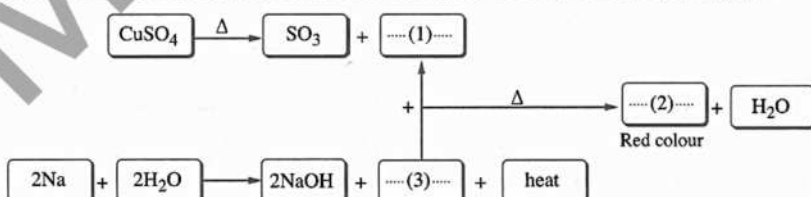
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27

Study the chemical reactions in the following diagram, then answer :

Write the chemical formula for the chemical materials labeled from (1) to (3).



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28

From the reaction : $2\text{NaOH} + \text{CuSO}_4 \longrightarrow \text{salt} + \text{precipitate}$

Answer the following :

1. Mention the name of the salt.
2. How can you measure the speed of reaction practically ?
3. What happens to the precipitate if heated strongly ?

(Write the equation of the reaction).

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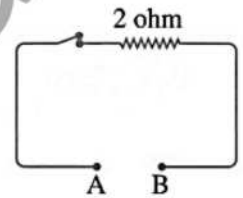
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29

If you have four similar electric cells :

The e.m.f of each cell is 2 volt.

Show by drawing the method of their connection between the two points (A) and (B) in the opposite figure to obtain current of intensity 3 ampere.



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30

Calculate : Current intensity due to the flow 6000 coulombs through across of a conductor in 5 minutes.

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31

Amr placed a piece of zinc in a dilute hydrochloric acid solution, with the formation of gas bubbles around the piece of zinc :

1. What is the name of the evolving gas?
2. What is the type of reaction?
3. What happens in the case of replacing the piece of zinc with a piece of copper ?

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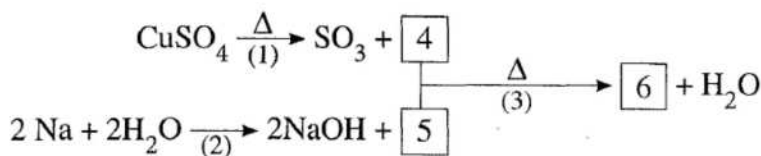
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32

32

Study the chemical reactions, in the following diagram then answer the following question :



First : Mention the type of chemical reactions : 1 , 2 , 3

Second : Write the chemical formula for : 4 , 5 , 6

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33

A pea plant with hybrid yellow seeds has been crossed over with a plant of green seeds. Explain on genetic bases the genotype of the parents, the gametes and the first generation individuals.

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34

Use symbols R,r to express the results produced from crossing between:
A pea plant with white flowers and another one with pure red flowers.

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35

From the following reaction and equation :



Explain :

1. The oxidation and reduction processes.
2. Determine the oxidizing agent and the reducing agent in the reaction.

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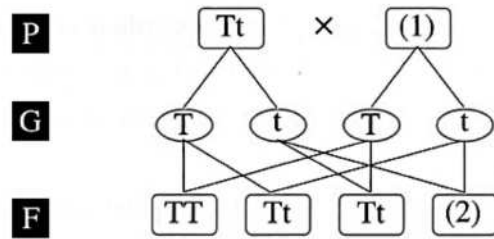
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36

The following figure represents a self pollination in pea plant with hybrid tall stem – replaces the digits (1) and (2) by suitable letters.



37

From the opposite figure :

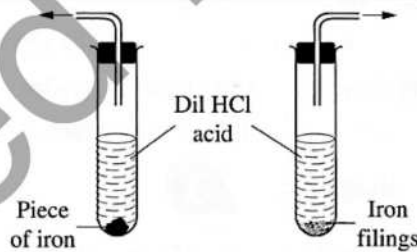
1. What is the name of this device ? And what is used ?
2. Write down the numbers (1) and (2).



38

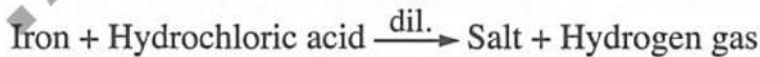
From the two opposite figures :

1. Express this reaction with a balanced symbolic chemical equation.
2. What is the factor that affects the speed of this reaction ?
3. What happens on replacing iron by copper ?



39

In the reaction :

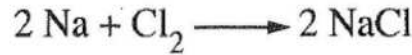


1. Write the chemical formula of the produced salt.
2. What happens when replacing a piece of iron with iron filings has the same mass related to the rate (speed) of the previous chemical reaction ?

34

40

From the following reaction :



Explain oxidation and reduction processes

{if you know that the atomic number of Na is (11) and Cl is (17)}

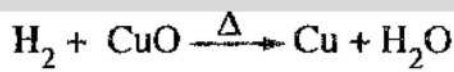
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41



in this reaction determine the oxidizing agent and reducing agent.

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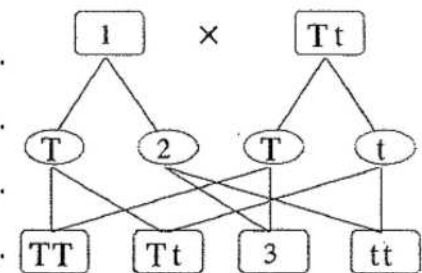
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42

The following figure represents the process of pollination in a pea plant of hybrid tall stem.

1. Write what is indicated by the numbers (1) , (2) and (3) by suitable symbols in your answer paper.
2. Define the law of segregation.



43

The potential difference between two ends of a conductor is (6 volt) and the electric current intensity passing in the conductor is (0.5 ampere). What is the electric current intensity passing in the conductor if it is connected by electric source. its electric potential is (12 volt) ?

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Model Answer

*(1) Write the scientific term:

- | | | | |
|--|---|--|---|
| <ol style="list-style-type: none"> 1. Direct current 2. Endocrine glands 3. Dominant traits 4. Electric current 5. Reduction process 6. Rheostat 7. Electric resistance 8. Speed of chemical reaction 9. Hormone 10. Electric intensity 11. Oxidase enzyme 12. Catalytic converter 13. Coulomb 14. Catalyst 15. Enzyme 16. Sievert | <ol style="list-style-type: none"> 17. Chemical reaction 18. Electric potential across a conductor 19. Acquired traits. 20. Neutralization reaction 21. Ohm 22. Target cell 23. Dwarfism 24. Recessive traits 25. Pure individual 26. Genetics 27. Testosterone 28. Electric potential of conductor 29. Chemical activity series | <ol style="list-style-type: none"> 30. Electromotive force 31. Growth hormone 32. Hybrid individual 33. Endocrine gland 34. Electric current 35. Simple substitution reaction 36. The principle of complete dominance 37. Hormone 38. Exophthalmic goiter 39. Genes 40. Oxidation 41. Gametes 42. Positive catalytic reaction | <ol style="list-style-type: none"> 43. Double substitution reaction 44. Reducing agent 45. Thermal decomposition reaction 46. Radioactivity phenomenon 47. Alternating electric current 48. Hormone disorder 49. Salt and water 50. Estrogen hormone 51. Oxidation process 52. Dominant traits 53. Voltmeter |
|--|---|--|---|

*(2) Choose the right answer:

- | | | | | | | | | | | | |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. A | 9. C | 17. C | 25. A | 33. B | 41. C | 49. C | 57. C | 65. C | 73. B | 81. B | 89. C |
| 2. B | 10. A | 18. C | 26. B | 34. B | 42. C | 50. B | 58. A | 66. A | 74. C | 82. D | 90. A |
| 3. B | 11. C | 19. D | 27. C | 35. D | 43. D | 51. D | 59. B | 67. D | 75. D | 83. B | 91. D |
| 4. C | 12. D | 20. B | 28. B | 36. A | 44. B | 52. D | 60. A | 68. C | 76. B | 84. A | |
| 5. A | 13. A | 21. A | 29. B | 37. B | 45. D | 53. C | 61. C | 69. A | 77. C | 85. A | |
| 6. A | 14. C | 22. B | 30. C | 38. A | 46. D | 54. C | 62. C | 70. B | 78. C | 86. A | |
| 7. B | 15. B | 23. B | 31. B | 39. C | 47. A | 55. B | 63. C | 71. C | 79. D | 87. D | |
| 8. B | 16. C | 24. B | 32. B | 40. C | 48. D | 56. A | 64. D | 72. B | 80. B | 88. D | |

*(3) Complete the following :

- | | | | |
|---|--|--|--|
| <ol style="list-style-type: none"> 1. $ZnCl_2 + H_2$ 2. Dominant – recessive 3. Planted 4. Growth 5. Genetic 6. Recessive 7. Voltmeter – volt 8. Genes – nucleotides 9. Direct – alternating 10. Thermal decomposition – simple substitution 11. Direct – alternating 12. Self – cross 13. Voltmeter 14. HCl 15. Thyroxin – calcitonin 16. Complete dominance 17. Human genome 18. Molecules 19. Chromosome | <ol style="list-style-type: none"> 20. Dwarfism 21. Gametes 22. Thyroxin 23. Sievert 24. Oxidase 25. Joule – coulomb 26. Salt – water 27. Decrease – increase 28. Ammeter – ohmmeter 29. Product 30. Adrenaline 31. 1.5 32. Thyroxin – thyroid 33. Radioactive – neutrons 34. Direct 35. Chemical reaction 36. Thermal decomposition 37. Genes 38. Parallel – series 39. Calcitonin – progesterone | <ol style="list-style-type: none"> 40. Chlorine – sodium 41. Hereditary – acquired 42. Voltmeter 43. DNA – Protein 44. Hydrogen – SO_3 45. Natural – artificial 46. Inversely 47. Ohmmeter – ohm 48. Two hereditary factors – gametes 49. $NO_2 - O_2$ 50. Mechanical – Electric 51. Slower 52. Gigantism 53. Hereditary 54. Breaking – formation 55. Sulphate – metal oxide 56. Voltmeter – volt 57. Red 58. Insulin | <ol style="list-style-type: none"> 59. Glucagon 60. Potential difference 61. Estrogen 62. Acquired 63. Dry cell 64. Dry 65. Salt – water 66. Reactant – product 67. 1 Ohm 68. Clear lime water 69. 100 % 70. Mendel 71. Voltmeter 72. Hydrogen 73. Gametes 74. Complete dominance 75. Iron rust 76. Genome |
|---|--|--|--|

*(4) Correct the underlined words:

- | | | | | |
|---|--|---|---|---|
| <ol style="list-style-type: none"> 1. Carbon dioxide 2. Faster 3. Progesterone 4. Sievert 5. Variable 6. Reduction 7. Negative catalyst 8. Free 9. Chemical 10. Stamen 11. Hereditary 12. Chromosome 13. Voltmeter | <ol style="list-style-type: none"> 14. Adrenalin 15. Petroleum oil 16. Seven 17. Equal 18. Faster 19. Growth 20. Volt 21. Fireworks 22. Kinetic 23. Oxygen 24. Endocrine 25. Thyroxin 26. Slow 27. Metal oxide | <ol style="list-style-type: none"> 28. Petroleum oil 29. Electric potential of conductor 30. Glucagon 31. Red 32. Oxygen 33. Pancreas 34. Ions 35. White 36. Equal 37. Red 38. Becquerel 39. Reactant | <ol style="list-style-type: none"> 40. Dry cell 41. Gene 42. Neutrons 43. Insulin 44. Parallel 45. Ammeter 46. Calcitonin 47. Genes 48. Increasing 49. Silver chloride 50. Reducing agent 51. Badel and Tatum 52. Increase | <ol style="list-style-type: none"> 53. Gigantism 54. Protein 55. Carbon dioxide 56. Iodine 57. Agricultural 58. Voltmeter 59. Watson and crick 60. Electrons 61. Coulomb |
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*(5) Give reason for:

1. Due to the decrease in the secretion of thyroxin hormone as a result of the lack of iodine from food as it enters in the hormone's structure.
2. Because zinc come before hydrogen in the chemical activity series, so they replace the hydrogen of acid, while copper comes after hydrogen in the chemical activity series, so it can't replace the hydrogen of acid.

$$\text{Zn} + 2\text{HCl} \xrightarrow{\text{dil.}} \text{ZnCl}_2 + \text{H}_2 \uparrow$$
3. Because by increasing the number of reactants molecules, the number of probable collisions between them increases, so the speed of reaction increases.
4. Because magnesium comes before copper in the chemical activity series, so it replaces copper in copper sulphate solution and copper precipitates as a red ppt.

$$\text{Mg} + \text{CuSO}_4 \longrightarrow \text{MgSO}_4 + \text{Cu} \downarrow$$
5. To prevent cross pollination with other flowers.
6. Because :
 - It is easy to be planted and it grows fast.
 - Its life cycle is short.
 - Its flowers are hermaphrodite, so it can be self-pollinated.
 - It can easily be artificially pollinated (human intervention).
 - It produces large numbers of plants in a generation.
7. Because it's acquired trait that can't be transmitted from a generation to another.
8. Because the oxidase enzyme in sweet potato acts as a catalyst which increases the rate of decomposition of hydrogen peroxide into water and oxygen gas.
9. Due to formation of silver chloride salt which doesn't dissolve in water.

$$\text{NaCl} + \text{AgNO}_3 \longrightarrow \text{NaNO}_3 + \text{AgCl} \downarrow$$
10. Because the target cells that are affected by hormone are located faraway from endocrine glands, so blood is the only way for the hormones to reach them.
11. To reduce the electric potential of the current used and get a suitable electric potential to charge the mobile.
12. Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules.
13. **Because** copper comes after hydrogen in the chemical activity series, so it can't replace the hydrogen of acid.
14. Because the low temperature in the fridge slows down the speed of the chemical reactions done by bacteria which cause the rot of food.
15. Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules.
16. Because the pancreas secretes the insulin hormone and the glucagon hormone and the function of each hormone contradicts the function of the other hormone.
17. Because sodium atom loses an electron and changes into positive (+ve) ion, while chlorine atom gains an electron and changes into negative (-ve) ion.
18. Because the gene of the ability to roll the tongue dominates over the gene of the non-ability to roll the tongue if they are both present together in an individual.
19. Because radiation causes changes in the sex chromosomes composition for living organisms.
20. Because the gene of the free ear lobe dominates over the gene of the attached ear lobe if they are both present together in an individual.
21. To control the electric current intensity passing through the circuit and the potential difference in the different parts of the circuit.
22. Because it secretes hormones that regulate the activities of most of other endocrine glands.
23. Because they release unseen rays spontaneous as a result of their atoms' nuclei containing neutrons more than required for their stabilization.
24. Because the target cells that are affected by hormone are located faraway from endocrine glands, so blood is the only way for the hormones to reach them.
25. Due to the increase in the secretion of the growth hormone at childhood.
26. Due to increasing the speed of chemical reaction by increasing the concentration of oxygen gas.
27. To insure that the plant doesn't be self-pollinated.
28. Because :
 - It can be transferred for long distances through wires.
 - It can be changed into a direct current.

29. Because the low temperature in the fridge slows down the speed of the chemical reactions done by bacteria which cause the rot of food.
30. To control the electric current intensity passing through the circuit and the potential difference in the different parts of the circuit.
31. Because the surface area in case of iron filings is larger than that in case of iron block and the speed of chemical reactions increases by increasing the surface area.
32. Because aluminium comes before hydrogen in C.A.S., so it replaces hydrogen of diluted acids.

$$2Al + 6HCl \xrightarrow{dil.} 2AlCl_3 + 3H_2 \uparrow$$
33. Because by increasing the temperature, the number of probable collisions between reactants molecules increases, so the speed of reaction increases.
34. Because the green pod trait dominates over the yellow pod trait in the pea plant according to the principle of complete dominance.
35. Because rice doesn't contain pro-vitamin (A) known as carotene which is converted into vitamin (A) inside the body.
36. Due to the presence of a layer of aluminium oxide (Al_2O_3) on aluminium surface, which takes time to separate from aluminium, which delays the starting of occurrence of the reaction.
37. To obtain a battery, the e.m.f. of it is high.
38. To measure the potential difference across the two terminals of the conductor.

*(6) What happen if:

1. The body stops growing, so the person becomes a dwarf.
2. A silvery precipitate of mercury is formed and oxygen gas evolves.

$$2HgO \xrightarrow{\Delta} 2Hg + O_2 \uparrow$$
3. This leads to the damage of bone marrow, spleen, digestive system and the central nervous system.
4. The blue color of copper sulphate disappears and a red precipitate of copper is formed.

$$Mg + CuSO_4 \longrightarrow MgSO_4 + Cu \downarrow$$
5. The ammeter reading becomes zero and the voltmeter reading becomes the e.m.f. of the battery.
6. A reaction takes place and hydrogen gas evolves

$$2Na + 2H_2O \longrightarrow 2NaOH + H_2 \uparrow + \text{heat}$$
7. The speed of the chemical reaction increases, due to the increase in the number of probable collisions between reactant molecules.
8. Leads to change in the cells composition which lead to destroy the cells, and also the chemical composition of the haemoglobin changes, it becomes incapable of carrying oxygen.
9. The individual will show the recessive trait.
10. The person will be diabetic
11. Hydrogen peroxide decomposes (breaks up) rapidly into water and oxygen gas evolves.
12. The speed of the chemical reaction decreases.
13. A black substance of copper oxide is formed, and carbon dioxide gas evolves.

$$CuCO_3 \xrightarrow{\Delta} CuO + CO_2 \uparrow$$
14. A white precipitate of silver chloride is formed.

$$NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl \downarrow$$
15. The glucose blood level decreases.
16. The electric current will pass from the conductor of high electric potential to that of low electric potential.
17. The first generation will be 100% dominant trait and the second generation will be 75% dominant trait : 25 % recessive trait (for each contrasting trait independently) .
18. All the produced pea plants are hybrid green pods.
19. The chemical reaction which produces the protein that is responsible for appearance of genetic trait does not occur, and so the genetic trait does not appear.
20. The number of collisions decreases .
21. The silvery colour of liquid mercury will be formed.
22. An effervescence occurs due to evolving of bubbles of carbon dioxide gas.

$$Na_2CO_3 + 2HCl \xrightarrow{dil.} 2NaCl + H_2O + CO_2 \uparrow$$
23. An electric current will pass from conductor (A) to conductor (B), and stops when the electric potential of both conductors (A) and (B) becomes equal.
24. It can't be able to carry oxygen, and that is from the cellular effects of the nuclear radiation.
25. All the resulting individuals are carrying the dominant trait.

26. This leads to decreasing in secretion of thyroxin hormone and this leads to that the human suffers from simple goiter.
27. Spontaneous decay to reach more stable composition.
28. The speed of chemical reaction increases.
29. The chemical structure of hemoglobin changed and can't be able to carry oxygen.
30. Hormonal disorders for most of the others endocrine glands secretion.
31. damage of bone marrow which is responsible for the formation of red blood cells.
32. An effervescence happens and the effervescence occurred in case of hot water is faster than in case of cold water.
33. No electric current will pass through the conducting bar.
34. The electric current intensity decreases.
35. A black substance of copper oxide is formed, and water vapour evolves.

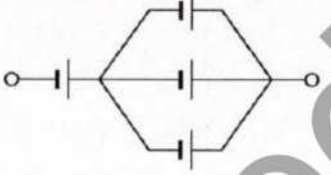

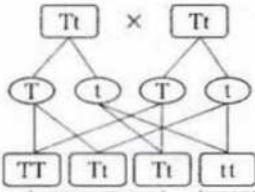
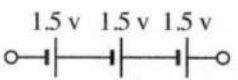
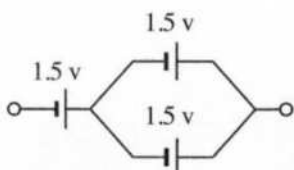
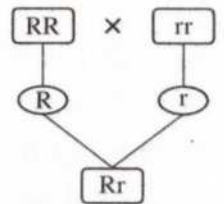
$$\text{Cu(OH)}_2 \xrightarrow{\Delta} \text{CuO} + \text{H}_2\text{O}\uparrow$$
36. The glucose blood level decreases.
37. The speed of the reaction will be decreased.
38. A yellowish white substance of sodium nitrite is formed and oxygen gas evolves.

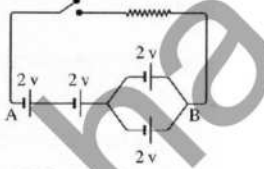
$$2\text{NaNO}_3 \xrightarrow{\Delta} 2\text{NaNO}_2 + \text{O}_2\uparrow$$
39. The resistance increases and the current intensity decreases.
40. It will be reduced and changed into a negative ion and it became an oxidizing agent.
41. Cross-pollination with other flowers will occur.
42. No electric current flows, because there is no potential difference.
43. Its energy increases , so it emits unseen (invisible) radiations to reach a more stable composition
44. Food becomes rotten due to increasing chemical reactions done by bacteria.
45. The electric charges transfer from the second conductor to the first conductor until their electric potential becomes equal.
46. The trait of each pair is inherited independently and all individuals of the first generation appear carrying the dominant traits only and in the second generation , the dominant trait and the recessive trait appear at a ratio of 3 : 1
47. The dominant trait appears.
48. Increasing the number of collisions by increasing the temperature
49. The rate of decomposition of hydrogen peroxide increases.
50. The dominant individuals are hybrid .

*(7) Define:

1. It is the appearance of a dominant hereditary trait in the individuals of the first generation when two individuals are crossed, one of them carries a pure trait contrasting the trait carried by the other individual.
2. When two pure individuals of any one pair of hereditary traits are different from each other, only the dominant trait appears in the first generation, while the two traits appear in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).
3. It plays a main role in food assimilation processes in the body, where it liberates the energy necessary for the human body from food.
4. It stimulates body's organs to respond to emergencies
5. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature
6. It is a reaction between an acid and an alkali to form salt and water.
7. It is the breaking up of bonds in molecules of the reactants and formation of new bonds in the molecules of resultants (products) from the reaction.
8. It is the arrangement of metals in a descending order according to the degree of their chemical activity.
9. It is the spontaneous decay of the atoms' nuclei of radioactive elements that are present in nature in an attempt to achieve a more stable composition.
10. They are parts of DNA present on the chromosomes and they are responsible for appearing the individual's hereditary traits.
11. It is a chemical substance (or a chemical message) that controls and organizes most of the vital activities and functions in the bodies of living organisms.
12. It is the electric current intensity passing through a circuit when a charge of one coulomb passes through a given cross-section in one second.
13. It is a substance which changes the rate of the chemical reaction without changing or being used up.
14. When two pure different individuals bearing two pairs or more of alternative (contrasting) traits are crossed, the trait of each pair is inherited independently of the others and appears in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).
15. It is the condition (state) of an electric conductor that shows the transfer of the electricity from or to it when it is connected to another conductor.
16. It is a genetic map that shows the complete set of genes present on the human chromosomes.

***(8) Problems**

<p>1</p>	$P = \frac{W}{q} = \frac{66000}{300} = 220 \text{ volt.}$	<p>10</p> <p>1. (A) is H₂O (B) is H₂↑ 2. In general , we detect H₂ gas by approaching a burning match to it, so it burns with a pop sound. 3. Reaction No. (1) is simple substitution reaction. Reaction No. (2) is oxidation and reduction reaction.</p>
<p>2</p>	<p>1. e.m.f. of the battery = e.m.f. of one cell X no. of cells = 1.5 × 3 = 4.5 volt 2. e.m.f. of the battery = e.m.f. of one cell = 1.5 volt</p>	<p>11</p> <p>1. Rr 2. Rr – rr 3. Yes, because the dominant trait appear in individuals of first generation at a ratio of 100% and in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).</p>
<p>3</p>	<p>1. Curve (C) 2. Curve (B) 3. Curve (A)</p>	<p>12</p> <p>1. Because silver comes after hydrogen in C.A.S. 2. Due to the presence of aluminium oxide layer, which take time till separates and then the metal becomes exposed to the acid. 3. The speed of the chemical reaction increases, due to the increase in the surface area of the reactant. 4. Hydrogen gas.</p>
<p>4</p>	$\therefore q = \frac{W}{V}$ $\therefore q = \frac{240}{40} = 6 \text{ coulomb}$ $\therefore I = \frac{q}{t}$ $\therefore I = \frac{6}{2} = 3 \text{ ampere}$	<p>13</p> <p>$q = I \times t = 2 \times 5 \times 60 = 600 \text{ coulomb}$ work done (W) = V × q = 2 × 600 = 1200 joule</p>
<p>5</p>	<p>First way :</p>  <p>Second way :</p> 	<p>14</p> <p>P </p> <p>G</p> <p>F</p> <p>27 members with long wings 9 members with short wings</p>
<p>6</p>	<p>1. 6 2. 8</p>	<p>15</p> $\therefore I = \frac{V}{R}$ $\therefore I = \frac{110}{1100} = 0.1 \text{ ampere}$ $\therefore q = I \times t$ $\therefore q = 0.1 \times 600 = 60 \text{ coulomb}$
<p>7</p>	<p>1. a 2. c 3. c 4. c</p>	<p>16</p> <p>1. </p> <p>2. </p>
<p>8</p>	<p>1. (A) chemical formula is Cu(OH)₂ (B) chemical formula is H₂ (C) chemical formula is Cu 2. Reaction (1) is thermal decomposition reaction. Reaction (2) is simple substitution reaction. Reaction (3) in oxidation and reduction reaction. 3. Reduction process.</p>	<p>9</p> <p>P </p> <p>G</p> <p>F</p> <p>Ratio 100% red flowers</p>

17	Figure (c).	27	1. CuO 2. Cu 3. H ₂ ↑
18	1. Sodium carbonate with diluted Hydrochloric acid, produce CO ₂ gas which turbid clear limewater. 2. Sodium with water, produce H ₂ gas which burning with a pop sound.	28	1. Sodium sulphate (Na ₂ SO ₄). 2. By the disappearance rate of blue copper sulphate solution, or the appearance rate of blue copper hydroxide precipitate. 3. $\text{Cu(OH)}_2 \xrightarrow{\Delta} \text{CuO} \downarrow + \text{H}_2\text{O}$ copper hydroxide (blue colour) copper oxide (black colour)
19	1. 3 N ₂ 2. (1) Nitrogen gas (3N ₂) (2) Sodium (2Na) (3) Sodium azid (2 Na N ₃) 3. It is one of the most important safety means of car, where it inflated by nitrogen gas at an extreme speed on the occurrence of car accident.	29	∴ V = R × I ∴ V = 2 × 3 = 6 volt So the connection of four electric cells as in the opposite figure. their total e.m.f = 2 + 2 + 2 = 6 volt. 
20	∴ R = $\frac{V}{I}$ ∴ R = $\frac{6}{0.5} = 12$ ohm ∴ I = $\frac{V}{R}$ ∴ I = $\frac{12}{12} = 1$ ampere	30	∴ I = $\frac{q}{t}$ ∴ I = $\frac{6000}{5 \times 60} = 20$ ampere
21	P TtAa × ttaa G TA Ta tA ta ta F TtAa Ttaa ttAa ttaa Long-stemmed red flower Long-stemmed white flower Short-stemmed red flower Short-stemmed white flower	31	1. Hydrogen gas. 2. Simple substitution reaction. 3. No reaction.
22	W = v × q = 50 × 20 = 1000 Joule	32	1. First : (1) Thermal decomposition reaction. (2) Simple substitution reaction. (3) Oxidation and reduction reaction. Second : (4) CuO (copper oxide). (5) H ₂ (Hydrogen gas). (6) Cu (copper).
23	1. direct – dry cell – chemical. 2. alternating – dynamoc – mechanical.	33	P Yy × yy G Y y Y y F Yy Yy yy yy Hybrid yellow seeds Pure green seeds
24	I = $\frac{q}{t} = \frac{42}{30} = 1.4$ ampere ∴ The filament of the electric lamp doesn't burn, because the electric current intensity passing through it (1.4 ampere) is less than that (1.5 ampere) which it can sustain.	34	P RR × rr G R r F Rr Ratio 100% red flowers
25	1. NaNO ₃ decomposed by heat, produce yellowish white substance and oxygen. 2. Al replace the hydrogen of the acid after a while, salt is formed and hydrogen gas evolves.	35	1. The oxidation process : When (Mg) loses two electrons, and converted into a positive ion. the reduction process : when (2Cl) gain two electrons, and converted into a negative ion. 2. The oxidizing agent : chlorine atoms. the reducing agent : magnesium atom.
26	1. $2\text{N}_2\text{O}_5 \longrightarrow 4\text{NO}_2 + \text{O}_2 \uparrow$ 2. The graph (1) is N ₂ O ₅ The graph (2) is O ₂ The graph (3) is NO ₂		

36	1. Tt 2. tt	41	- Oxidizing agent is CuO because it loses oxygen and reduced to copper. - Reducing agent is H ₂ because it gains oxygen and oxidized to water.												
37	1. The rheostat, it used to control the electric current intensity flowing through the circuit and the potential difference in the different parts of the circuit. 2. (1) slider 3. cepper bar														
38	1. $Fe + 2HCl \longrightarrow FeCl_2 + H_2 \uparrow$ 2. The surface area of the reactant. 3. No reaction occurs.	42	(1) Tt (2) t (3) Tt												
39	1. FeCl ₂ 2. The speed of the chemical reaction increases.	43	$R = \frac{V_1}{I_1} = \frac{6}{0.5} = 12 \text{ ohm.}$ $I_2 = \frac{V_2}{R} = \frac{12}{12} = 1 \text{ ampere.}$												
40	Sodium atom is oxidized because it loses an electron, while chlorine atom is reduced because it gains an electron which lost from Sodium atom.		<table border="1" data-bbox="576 658 754 786"> <tr> <td></td> <td>K</td> <td>L</td> <td>M</td> </tr> <tr> <td>Na</td> <td>2</td> <td>8</td> <td>1</td> </tr> <tr> <td>Cl</td> <td>2</td> <td>8</td> <td>7</td> </tr> </table>		K	L	M	Na	2	8	1	Cl	2	8	7
	K	L	M												
Na	2	8	1												
Cl	2	8	7												

Final Revision

1- Definitions

Chemical reaction:

It is the breaking up of bonds in molecules of reactants and form new molecules of new products from reaction.

Thermal decomposition reaction:

They are the reaction which involves the breaking up of the compounds by the effect of heat into its elements.

Substitution Reactions:

Chemical activity series:

It is arrangement metals in descending order according to degree of their chemical reaction.

A)-simple substitution reactions:

They are chemical reactions in which one of the elements is higher in chemical activity substitutes (replaces) another in its solution.

B)-Double substitution reactions:

They are the reactions which involve double substitution (exchange) occurs between the ions (radicals) of two compounds to form to new compounds.

Reaction between acid & alkali (neutralization reaction):

It is the reaction between an acid & an alkali to form salt & water.

Oxidation:

It is a chemical process causes increase of the oxygen or decrease of hydrogen, OR the atom losses electron or more.

Reduction:

It is a chemical process which causes increase of hydrogen percentages or decrease of oxygen, OR atom gains electron or more.

Oxidizing agent:

It is a substance which gives oxygen or takes hydrogen during chemical reaction, OR atom gains electron or more.

Reducing factor:

It is a substance which takes oxygen or gives hydrogen during chemical reaction, OR atom loses electron or more.

The speed of chemical reaction:

It is the change in concentration of reactants & resultants at a unit of time.

Catalysts:

It is a substance which speeds up the chemical reaction without changing or being used up

Positive catalyst:

It is the catalyst speeds up the chemical reaction.

Negative catalyst:

It is the catalyst slow down the chemical reaction

Enzyme:

Is chemical substance is produced inside living organisms as a catalyst which increases the biological reaction.

Homogenous mixture:

It is the mixture in which the solute molecules are distributed in the solvent in a regular way in all parts, and its molecules cannot be distinguished by naked eye.

Non-homogenous mixture:

It is the mixture in which the solute molecules are distributed in the solvent in an irregular way in all parts, and its molecules can be distinguished by naked eye.

The Solution:

It is the mixture that is homogenous in composition and properties, and consists of two substances or more are not chemically united called (Solvent & solute).

Solvent:

It is substance found with greater amount in solution & being dissolved.

Solute:

It is a substance found with smaller amount in solution & dissolves in solvent.

Unsaturated solution:

It is the solution in which an additional amount of the solute can be dissolved at a certain temperature.

Saturated solution:

It is the solution in which no a additional amount of solute can be dissolved without a change in temperature.

(Supper) Per-saturated solution:

It is the solution which accepts the dissolution of additional amount of solute with increase temperature.

Acid: It is a substance whose aqueous contains positive hydrogen ions or positive protons.

base (alkali):

It is a substance whose aqueous contains negative hydroxide ions.

Mineral (salt):

It is a substance which produced from reaction of acid with alkali.

Electric current:

It is the flow of electric negative charges (electrons) through a conductor.

The electric current intensity:

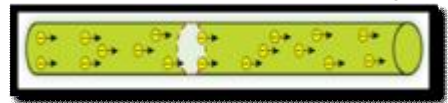
It is the quantity of electric charges flowing through a cross section of a conductor in one second.

The electric potential of a conductor:

It is the condition of electric conductor that shows the transfer of electricity to or from it when it is connected to another.

Ampere:

Electric current →



It is the electric current intensity passing through a circuit when a charge of one coulomb passes in one second.

Coulomb:

It is the charge when current passes in a conductor ampere in one second.

Volt:

It is the potential difference in a conductor on doing a work of joule to transfer quantity of one coulomb.

Joule:

It is the amount of work done by a force of one Newton to move object through a distance of one meter.

The electromotive force (e.m.f)

It is equal to potential difference across two poles of electric source when circuit is open.

The electric resistance (the resistor):

It is the obstruction that the electric current face during its movement through a conductor.

OR, it is the ratio between potential difference across two ends of conductor (resistor) & the electric current intensity passing through it.

The variable resistance (Rheostat):

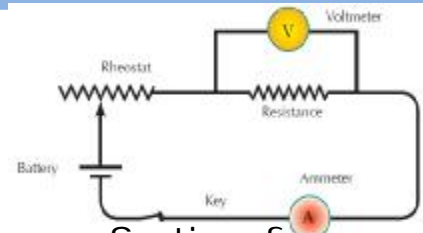
It is resistance which can be varied in order to control the current intensity & potential difference.

Ohm:

It is the resistance of conductor which allows passing one ampere of electric current intensity when the potential difference is one volt.

Ohm's law (the relation between current intensity & the potential difference):

The electric current intensity passing through a conductor is directly proportional to the potential difference at constant temperature.



Direct electric current:

It is unidirectional & has constant intensity.

Alternating electric current:

It is variable in both directions & intensity.

Series Connection:

It is connected positive pole of first cell to negative pole of second by a copper wire.

Parallel Connection:

It is connect positive poles of all cells together & negative poles of all cells by a copper wire.

Isotopes: They are atoms of same element with different number of neutrons & same number of protons.

Radioactive elements:

They are unstable elements whose atom's nuclei contain number of neutrons more than the number required for its stability, so it has excess energy

Radioactive phenomenon:

It is the spontaneous conversion of nuclei of radioactive elements that are present in nature in an attempt to achieve a more stable composition.

Natural radioactivity: It is radiation from natural radioactive elements present in nature.

Artificial radioactivity:

It is radiation or nuclear energy from nuclear plants.

Radiation pollution:

It is the increase of the amount of radiation in environment.

Genetics:

It is a science that researches the transmission of hereditary traits from one generation to another by studying the similarities & differences between parents & offspring.

Hereditary traits: They are traits that transmitted from one generation to another.

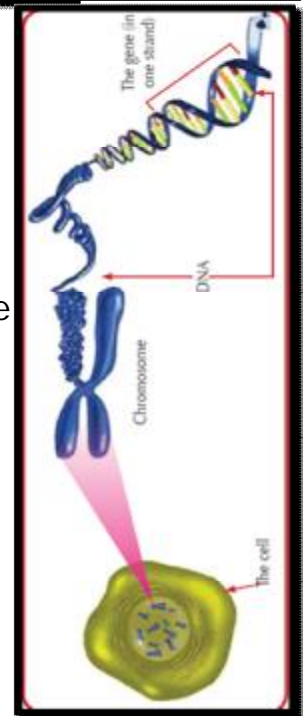
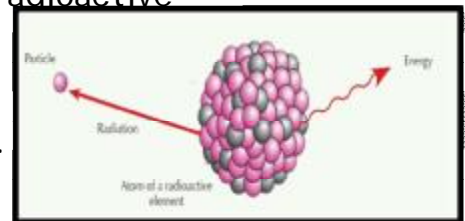
Acquired traits They are traits that aren't transmitted from one generation to another.

Gametes: They are reproductive cells that carry the hereditary factors of both parents.

Gene: It is a part of (DNA) and it is responsible for the appearance of inherited characters.

Dominant traits:

It is the trait that appears in all individuals of the first generation.



Recessive traits:

It is the trait that disappears completely | Individuals of first generation

The principle of complete dominance:

The appearance of a hereditary trait in the individuals of the first generation when two individuals copulate & one of them carrying pure hereditary trait contrasting trait carried by other individual.

Law of segregation of factors (Mendel's 1st law):

If two individuals that are different in a pair of alternative (contrasting) traits copulate, only dominant appears in first generation & two characteristics appear in second generation at ratio (3:1)

Inheritance of two pairs of allelomorphous traits (Mendel's 2nd law):

If two individuals that are different in two pairs or more of alternative (contrasting) traits copulate the trait of each pair is inherited independently & appears in second generation at ratio of (3:1)

DNA:

It is composed of two strands coiled around each other like the spiral ladder called double helix.

Mutations:

It is change in the nature of hereditary factors that control the traits of living organism which results in a change in the living organism's traits.

Genetic mutation:

Occur due to in chemical composition of one gene or more.

Chromosomal mutations:

They occur due to change in number of chromosomes or structure.

Somatic mutation:

They occur in body cells & they affect on the individual & not transmitted from one generation to another.

Gamete mutations:

Occur in reproductive cells & they effect and transmitted from one generation to another.

The spontaneous mutation:

It occurs without interference of human being.

The induced mutation:

It occurred (induced) by human being to obtain desirable traits in specific living organisms, especially in the plants.

Hormone:

It is a chemical substance (message) that controls & organizes most of vital activities & functions in the bodies of living organisms.

Endocrine Glands:

They are the organs that secrete hormones in the human body.

Feedback mechanism:

It is a mechanism which hormones work to achieve the internal balance (homeostasis) in human body.

Dwarfism:

Body stops growing, and become dwarf

Gigantism:

Continuous growth of limbs bones, and become giant

Simple goiter:

Enlargement of thyroid gland & neck. bec. Decrease of secretion in thyroxin hormone

Exophthalmi goiter:

Enlargement of thyroid gland with loss of weight, tension & exophthalmoses

Diabetes:

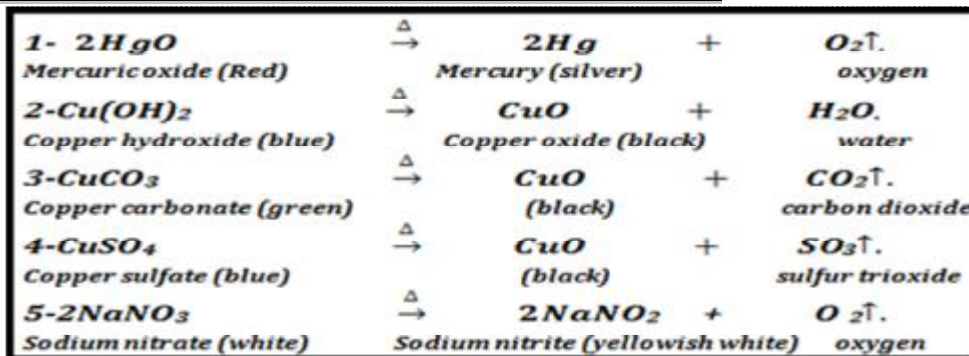
Cells disability to use glucose sugar. bec. Decrease of secretion of insulin hormone from pancreas.

Human genome project:

It is project (map) that is aim of discovering all of human inheriting factors (genes).

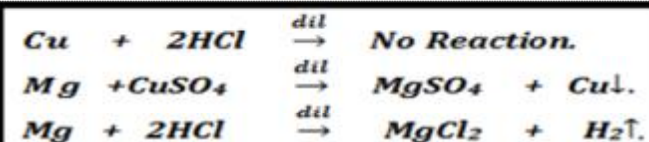
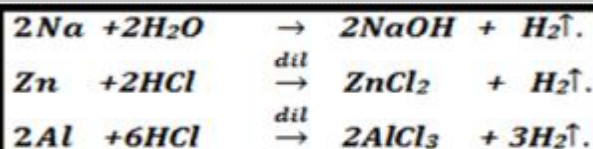
2- Equations

1- Thermal decomposition reaction: -



2- Substitution Reactions: -

A) - Simple substitution reactions: -



B)-Double substitution reactions: -

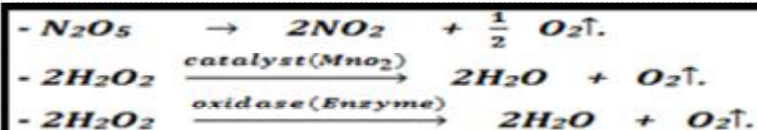
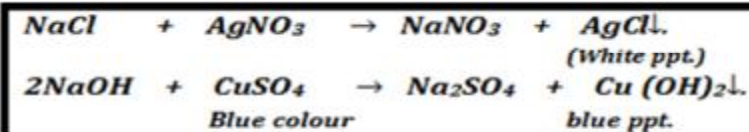
1-Reaction between acid & alkali (neutralization reaction):



2-Reaction between acid and salt:



3-Reaction between two salt solutions:



3- Economy of some solutions

(1)-Economic importance of some acids:

1-Acids secreted by stomach: help in digestion of proteins.

2-lactic acid: produced in muscles during physical exercises. (Help in muscles contraction).

3-Citric or (Ascorbic) acid (vitamin C) in orange, guava & tomatoes: protect us from common cold & improve immunity of body against common cold.

4-Folic acid (in green leaves of vegetables): Necessary for proper growth of cells.

5-Diluted (HCL) & other: used in cleaning surfaces in house like detergents & in polishing metals surfaces.

6-Nitric & phosphoric acids: used in manufacture of fertilizers.

7-Sulphuric acid: used in car batteries, fiber manufactures and oil distillation.

(2)-Economic importance of some common bases:

1-Magnesium hydroxide Mg(OH)_2 : used in manufacture of anti acids (medicines to neutralize stomach acidity)

2-calcium hydroxide Ca(OH)_2 used in Civil works such as preparation of cement mixture bec. it reacts with CO_2 in air & changes to calcium carbonate (rocky substance) used in water treatment & reduction of soil acidity .

(3)-Economic importance of some common minerals:

1-Calcium & magnesium salts in body: main comports of bones & teeth.

2-Phosphorus salts: in body form tissues.

3-Sodium & potassium salt: in responsible of transfer nerve impulses.

4-Sodium chloride (NaCl) table salt: used in salting & preserving food

5-Calcium carbonate: used in manufacture of glass & cement.

6-Potassium nitrate: used in Manufacture of fertilizers & explosives.

7-Silver nitrate: used in manufacture of sensitive camera films.

4- The safe uses of nuclear energy

1-Medical filed: treat (diagnose) cancer.

2-Agricultural field: to eliminate pest & improve some plants.

3-industrial field: to convert sand to silicon sheets that used in manufacturing of computer processors & to discover defects in manufactured products.

4-Electrical generation filed: used to heat water to produce steam which used to operate turbines to generate electricity.

5-Space exploration filed: Radioactive materials are used as a nuclear fuel for rockets that fly in space.

6-Drilling field: for petroleum and underground water.

5- Harms of nuclear energy

1) Effect of exposure to a large dose of radiation a short time:

1-damage spleen.

2-damage digestive system.

3-damage nervous system.

4-damage bone marrow (it responsible

for the formation of red blood cells): leads to feeling of being sick - sore throat - accompanied by nausea, vertigo & diarrhea.

2) Effect of exposure to small dose of radiation for a long time (month or years):

1-physical and Genetic effects:

Changes in sex chromosome composition which results in abnormal birth.

2-cellular effects:

Changes in cells composition lead to destroying cells chemical composition of hemoglobin changes so it becomes in capable of carrying oxygen.

*measuring unit of radiation is (Rem), and maximum safe dose, not exceed 5Rem in one day.

***Protection (Precautions) from radiation pollution:**

1-dont be exposed to nuclear radiation that maximum safe doses (5 rem in one day).

2-workers with radioactive elements in labs should wear radiation protective gloves & masks.

3-follow precautions with radioactive wastes away from underground water path, earth quakes, volcanoes & animals.

4-Nuclear wastes of weak & medium radiation (surrounded by cement layer & placed in ground) while strong radiation (cooled by water & placed in deeply buried in ground away from inhabited areas).

5-Establish laws for nuclear plants to cool the hot water before throwing in seas & lakes.

6- Laws

1)	$I = \frac{q}{t}$	Unit: Ampere = $\frac{\text{Coulomb}}{\text{second}}$
2)	$V = \frac{W}{q}$	volt = $\frac{\text{Joule}}{\text{Coulomb}}$
3)	$R = \frac{V}{I}$	Ohm = $\frac{\text{Volt}}{\text{Ampere}}$

7- The function of gene



Compare between

- Hormones, diseases due to hormone disorder in human body.
- Oxidation, reduction process and oxidizing, reducing agent.

Good Luck

Choose the correct answer :

- 1- The measuring unit for absorbed nuclear radiation is the
a. Joule b. Sievert c. Coulomb d. Ampere
- 2- Direct current can be produced from
a. Electrochemical cells b. electric generator c. electric power stations. d. electromotive
- 3- The reaction of oil with caustic soda is one of the reactions.
a. very fast b. relatively slow c. very slow. d. fast
- 4- A hormone called stimulates the release of stored sugar from the liver.
a. estrogen b. insulin c. glucagon d. thyroxin
- 5- The effects of radiation are a result of changing the sex chromosomes of the cells.
a. physical b. genetic c. cellular d. chemical
- 6- On heating red mercuric oxide, it decomposes into
a. oxygen b. mercury c. oxygen and mercury d. no correct answer
- 7- At the beginning of the reaction the percentage of the reactant concentration equal
a. 100% b. 0% c. 50% d. no correct answer
- 8- The mathematical relation of the Ohm's law is
a. $R = V / I$ b. $I = R / V$ c. $R = I \times V$ d. no correct answer
- 9- The scientist who discovers radioactivity phenomenon was
a. Ohm b. Becquerel c. Ampere d. Mendel
- 10- The two factors of hereditary trait are similar in the individual
a. pure b. hybrid c. recessive d. pure and recessive
- 11- Four similar electric cells, are connected in series each one has e.m.f. of 1.5 volt, so the total e.m.f. equal volt a. 3 b. 6 c. 1.5 d. 12
- 12- Measuring unit of the quantity of electricity is
a. ampere b. coulomb c. volt d. joule
- 13- hormone, liberates the energy necessary for the body from food.
a. Growth b. Estrogen c. Thyroxin d. Progesterone
- 14- All the following are radioactive elements except
a. radium b. uranium c. iron d. cesium
- 15- By adding silver nitrate solution to sodium chloride solution, a precipitate is formed.
a. black b. white c. blue d. brown

- 16- At the end of the chemical reaction, the concentration of the reactants is
- a. zero b. 25% c. 50% d. 100%
- 17- The substance which changes the rate of the reaction without being changed is known ...
- a. oxidizing agent b. active agent c. catalyst d. reducing agent
- 18- Which of the following traits is dominant in human?
- a. straight hair b. blue colored eyes c. the wide eyes d. presence of freckles
- 19- The hormone which stimulates body organs to respond for emergencies is
- a. insulin b. glucagon c. estrogen d. adrenalin
- 20- The trait is always pure.
- a. recessive b. dominant c. hybrid d. hereditary
- 21- When added copper filings to diluted hydrochloric acid
- a. copper oxide is formed b. copper chloride is formed
- c. hydrogen gas is formed d. no chemical reaction occurs
- 22- The hormone that control the calcium level in the blood is hormone.
- a. calcitonin b. adrenalin c. estrogen d. insulin
- 23- Limewater turbid when gas passes through it.
- a. SO₃ b. H₂ c. CO₂ d. O₂
- 24- The measuring unit for absorbed nuclear radiation is the
- a. Joule b. Sievert c. Coulomb d. Ampere
- 25- From the properties of direct current is
- a. change intensity b. change direction
- c. constant intensity and direction d. change intensity and direction
- 26- The chemical reactions of ionic compound are
- a. slow b. fast c. between molecules d. (a) and (c) together
- 27- hormone, liberates the energy necessary for the body from food.
- a. Growth b. Estrogen c. Thyroxin d. testosterone
- 28- Enzymes act as in most of the biological processes.
- a. oxidizing agent b. detergent agent c. reducing agent d. catalysts
- 29- On crossing male and female their genotype (Bb), so the genotype (BB) is may produced in their offspring at a percentage of
- a. 100% b. 50% c. 75% d. 25%

- 30- The hormone that promotes the growth of endometrium is the hormone.
 a. testosterone b. progesterone c. estrogen d. growth
- 31- All the following elements replace hydrogen of the diluted acid except
 a. Al b. Zn c. Au d. Sn
- 32- Calcitonin hormone controls level in the blood.
 a. potassium b. oxygen c. calcium d. iron
- 33- The scientist who discovers radioactivity phenomenon was
 a. Ohm b. Becquerel c. Newton d. Mendel
- 34- The scientists make a model of the DNA molecule.
 a. Badel and Tatum b. Newton and Mendel
 c. Watson and Crick d. Becquerel and Moshrafa
- 35- The scientists discovered the means of how the genes control the appearance of genetic traits.
 a. Badel and Tatum b. Newton and Mendel
 c. Watson and Crick d. Becquerel and Aly Moshrafa
- 36- When magnesium replaces copper in a solution of one of its salts, a precipitate is formed.
 a. black b. green c. red d. blue
- 37- The two factors of hereditary trait are similar in the individual
 a. pure b. hybrid c. recessive d. (a) and (c) together
- 38- In dynamo, energy is converted into electric energy.
 a. magnetic b. mechanical c. chemical d. light
- 39- Oxidation is a chemical process which increases percentage in substance.
 a. hydrogen b. oxygen c. helium d. fluorine
- 40- From the recessive hereditary traits in the human is the
 a. smooth hair b. presence of dimples c. wide eyes d. brown eyes
- 41- The use of the sliding rheostat is of the electric circuits.
 a. change the value of resistance b. measurement of current intensity
 c. measurement of potential difference d. measurement of electromotive force
- 42- A reaction between acid and alkali to form salt and water is known reaction.
 a. reduction b. neutralization c. oxidation d. simple substitution
- 43- The measuring unit for absorbed nuclear radiation is the
 a. Joule b. Sievert c. Coulomb d. Ampere

- 58- Mendel removed of a pea plant, to avoid self-pollination.
 a. sepals b. stigmas c. stamens d. petals
- 59- Sweet potato has oxidase enzyme to decompose faster.
 a. hydrogen chloride b. sodium chloride c. hydrogen peroxide d. sodium carbonate
- 60- The measuring unit for absorbed nuclear radiation is the
 a. Joule b. Sievert c. Coulomb d. Ampere
- 61- The is one example of electrochemical cells.
 a. dynamo b. rheostat c. voltmeter d. dry cell
- 62- Substance that gives oxygen or removes hydrogen is called
 a. oxidizing agent b. catalyst c. reducing agent d. oxidation
- 63- From the dominant traits in human being
 a. straight hair b. wide eyes c. absence of dimples d. attached ear lobe
- 64- Air bag contains sodium
 a. sulphate b. azid c. oxide d. carbonate
- 65- $\text{Zn} + 2\text{HCl} \rightarrow \dots + \text{H}_2$
 a. O_2 b. CO_2 c. ZnCl_2 d. H_2O
- 66- Carbon dioxide evolves during thermal decomposition of compound.
 a. HgO b. CuSO_4 c. CuCO_3 d. $\text{Cu}(\text{OH})_2$
- 67- On adding manganese dioxide to hydrogen peroxide solution. So manganese dioxide quantity
 a. increase b. decrease c. doesn't changed d. no correct answer
- 68- The gland that secretes hormones raises the level of sugar in the blood is
 a. pancreas b. glucagon c. insulin d. all the previous
- 69- The measuring unit of electric charges is
 a. coulomb b. ampere c. volt d. ohm
- 70- Function of hormone is contradict the function of insulin hormone.
 a. testosterone b. glucagon c. adrenalin d. growth
- 71- The recessive trait appears from
 a. two dominant genes b. a dominant gene
 c. two recessive genes d. a recessive and a dominant gene
- 72- In the following reaction : $2\text{Br}^- \rightarrow \text{Br}_2 + 2\text{e}^-$ what will happen to bromide ion?
 a. oxidation b. reduction c. oxidation and reduction d. no correct answer

- 73- When copper sulphate is heated, a deposit is formed.
 a. black b. green c. blue d. reddish
- 74- From the dominant traits in human being
 a. straight hair b. narrow eyes c. no freckles d. attached ear lobe
- 75- A reaction between acid and alkali to form salt and water is known reaction.
 a. reduction b. neutralization c. oxidation d. simple substitution
- 76- The most active metal from the following, according to chemical activity series is
 a. copper b. sodium c. hydrogen d. aluminium
- 77- The hormone that is responsible for the appearance of secondary male sex characteristics is the hormone.
 a. insulin b. progesterone c. testosterone d. adrenaline
- 78- When hydrochloric acid reacts with sodium carbonate, the produced gas
 a. turbid limewater b. burn with pop sound c. increases ignition d. red brown color
- 79- The ratio between potential difference and electric current intensity equal to
 a. e.m.f. b. work done c. quantity of electricity d. electric resistance
- 80- If electric current intensity of 2 ampere flow in 2 minutes then the quantity of electricity = coulomb.
 a. 4 b. 12 c. 120 d. 240
- 81- The chemical formula of nitrogen pentaoxide gas is
 a. N₂O₅ b. 5NO₂ c. N₅O₂ d. NO₂
- 82- The radiologist should not be exposed to nuclear radiation in amounts more than milli Sievert per year.
 a. 1 b. 10 c. 15 d. 20
- 83- The public should not be exposed to nuclear radiation in amounts more than milli Sievert per year.
 a. 1 b. 10 c. 15 d. 20
- 84- The increase of secretion in the growth hormone lead to
 a. dwarfism b. fatness c. gigantism d. inflation
- 85- The time needed for ionic reactions is of covalent reactions.
 a. more than b. less than c. equal d. more than or equal
- 86- The flow of electric charges through a metal wire represents
 a. resistance b. electric current intensity c. electric current d. potential difference
- 87- Mendel's second law is known as law of of factors.
 a. independent assortment b. segregation c. fusion d. disappearance

- 88-Mendel's first law is known as law of of factors.
a. independent assortment b. segregation c. fusion d. disappearance
- 89- Sodium azid in air bags in car decomposes into gas.
a. H₂ b. O₂ c. CO₂ d. N₂
- 90-The reaction : $\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$ represent process.
a. oxidation b. reduction c. decomposition d. substitution
- 91- The hormone which simulates body organs to respond for emergencies is
a. insulin b. glucagon c. estrogen d. adrenalin
- 92- To transfer electric charge of 10 coulomb between two points the potential difference between them is 20 volts, joules are needed.
a. 40 b. 2 c. 20 d. 200
- 93- The hormone that decreases the sugar level in the blood is
a. Insulin b. glucagon c. adrenalin d. calcitonin

Write the scientific term for each of the following statements :

1. The breaking up of bonds in reactants and forming of new bonds in the products. **(chemical reaction)**
2. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. **(Ohm's law)**
3. Chemical reactions in which a catalyst speed up their rate. **(positive catalytic reaction)**
4. The arrangement of metallic elements in a descending order according to their chemical activity. **(chemical activity series)**
5. The force that binds the nucleus components and overcomes the repulsion force between the positively charged protons. **(nuclear binding force)**
5. The change in concentration of the reactants and products at a unit time. **(speed of chemical reaction)**
6. Reaction between acid and alkali forming salt and water. **(neutralization reaction)**
7. A chemical process which increase oxygen percentage in the substance. **(oxidation)**
8. A chemical process which decrease oxygen percentage in the substance. **(reduction)**
9. A disease that occurs due to increase in secretion of thyroxin hormone. **(exophthalmic goiter)**
10. They are chemical reactions which involve the breaking up of the compound into its simple elements or compounds by the effect of heat. **(thermal decomposition reaction)**
11. It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor. **(potential difference)**
12. Elements whose atom's nuclei contain a number of neutrons more than the number required for its stability. **(radioactive elements)**
13. The flow of electric negative charges in a conducting material. **(electric current)**
14. The characters transmitted from one generation to another. **(hereditary traits)**
15. The traits which are not transmitted from one generation to another. **(acquired traits)**
16. They are parts of DNA on the chromosomes and control the hereditary traits of the individual. **(genes)**
17. Spontaneous decaying of the atom's nuclei of some elements to achieve more stable composition. **(radioactivity phenomenon)**
18. It is the quantity of electric charges in coulomb flowing through a cross-section of the conductor in one second. **(current intensity)**
19. Ductless glands that secrete their hormones directly in the blood. **(endocrine glands)**
20. The state of a conductor that determines the transfer of electricity from or to it. **(electric potential of conductor)**
21. The charge that transfers with a constant electric current its intensity one ampere in one second. **(coulomb)**

22. Chemical message that control and organizes most of the vital activities and function in the body organs. (hormones)
23. A substance which increases rate of chemical reactions without being consumed. (catalyst)
24. The appearance of a dominant hereditary trait in individuals of first generation when two individuals crossed, one of them carrying pure hereditary trait contrasting trait carried by the other individual. (principle of complete dominance)
25. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (Ohm's law)
26. Organs secrete hormones directly into blood stream. (endocrine glands)
27. The substance formed by gene and it is responsible for occurrence of a certain chemical reaction. (enzyme)
28. The substance which gives oxygen or take hydrogen away during a chemical reaction. (oxidizing agent)
29. The trait that appears in all individuals of the first generation in Mendel's experiments. (dominant trait)
30. Chemical reactions in which an element substitutes another one. (simple substitution reaction)
31. The potential difference between the two poles of the battery when the electric circuit is open. (electromotive force)
32. The hormone which secreted from the pituitary gland to controls the speed rate of growth of muscles and bones. (growth hormone)
33. The change that appear on a living organism when exposed to nuclear radiations. (physical effects)
34. The individual who carries two genetic factors one of the dominant trait and the other of the recessive trait. (hybrid individual)
35. The resistance of a conductor that allows the passing of electric current of 1 ampere through it when the potential difference between its two ends is 1 volt. (ohm)
36. The hormone which is responsible for the appearance of the secondary male sex characters. (testosterone)
37. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (Ohm's law)
38. The measuring unit for absorbed nuclear radiation. (Sievert)
39. A chemical process in which an atom of the element gains one electron or more. (reduction)
40. The science that research in the similarities and difference between the individuals in the same species. (Mendel)
41. Chemical reactions in which exchange occurs between the ions of two compounds to form two new compounds. (double substitution reaction)

42. The individual who carries a similar pair of hereditary genes whether dominant or recessive. (pure individual)
43. An increase or decrease of secretion in one of the hormones as the responsible gland doesn't work properly. (hormone disorder)
44. The trait that disappeared in the first generation. (recessive trait)
45. Chemically consists of a nucleic acid DNA combined with proteins. (chromosomes)
46. The opposition that the electric current faces during its passage through a conductor. (electric resistance)
47. A disease caused as a result of decreasing the secretion of the growth hormone at the childhood. (dwarfism)
48. The trait which are unable to transmit from a generation to another. (acquired trait)
49. An electric current is suitable for use in electroplating processes. (direct current)
50. An electric current is not suitable for use in electroplating processes. (alternating current)
51. The cells which the hormones affect and they are located away from the endocrine gland that secretes hormone. (target cell)
52. The cells by which the hereditary traits are transmitted from parents to offspring. (gametes)
53. They are chemical substance produced by the body of living organism act as catalysts that increase the speed of biological reactions. (enzyme)
54. It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor. (potential difference)
55. The substance which loses one electron or more during a chemical reaction. (reducing agent)
56. The enzyme which is found in sweet potato and accelerates the decomposition rate of hydrogen peroxide. (oxidase enzyme)
57. The metallic can exists in most modern cars to treat the harmful gases emitted from the engine. (catalytic converter)
58. Parts of DNA that are present on the chromosomes and carry the hereditary traits of the individual. (genes)
59. The opposition that the electric current faces during its passage through a conductor. (electric resistance)
60. Special structure by which hereditary traits transferred from parents to offspring. (gametes)
61. Used in some electric circuits to control current intensity as the resistance directly proportional with the length of wire. (rheostat)
62. Chemical reactions in which a catalyst decrease their rate. (negative catalytic reaction)
63. The substance which gives oxygen or takes hydrogen away during a chemical reaction. (oxidizing agent)

64. The hormone that is responsible for the appearance the male secondary sex characters. (testosterone)
65. A chemical process in which an atom loses one electron or more in a chemical reaction. (oxidation)
66. It is an electric current with constant intensity and flow in one direction through the electric circuit. (direct current)
67. The substance which gains one electron or more during a chemical reaction. (oxidizing agent)
68. The substance which takes oxygen away or gives hydrogen during a chemical reaction. (reducing agent)
69. They are changes in the sex chromosomes composition which result in abnormal birth. (genetic effect of radiation)
70. They are changes in the cell composition which lead to destroying the cells. (cellular effect of radiation)
71. They are atoms of the same element with the same number of protons and with different number of neutrons. (isotopes)
72. It is an electric current with variable intensity and flow in two opposite directions through the electric circuit. (alternating current)
73. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (Ohm's law)
74. It is the quantity of electric charges in coulomb flowing through a cross-section of the conductor in one second. (current intensity)
75. They are chemical reactions which involve the breaking up of the compound into its simple elements or compounds by the effect of heat. (thermal decomposition reaction)
76. The device used to measure the electric current intensity. (Ammeter)
77. The device used to measure the potential difference of a conductor. (Voltmeter)
78. The device used to measure the electromotive force of the battery. (Voltmeter)
79. The scientists make a model of the DNA molecule. (Watson and Crick)
80. The scientists discovered how the genes control the appearance of genetic traits. (Badel and Tatum)
81. The scientist who discovers radioactivity phenomenon (Becquerel)

Rewrite the following statement after correcting the underline word :

- 1- Mendel's second law is called the law of segregation of factors.
(independent assortment)
- 2- Most metal carbonates decompose by heat to metal oxide and nitrogen gas evolves.
(carbon dioxide)
- 3- The reactions of ionic compounds are slower than those of the covalent compounds.
(faster)
- 4- Estrogen hormone promotes the growth of endometrium. (progesterone)
- 5- Ohm is the measuring unit for absorbed nuclear radiation. (Sievert)
- 6- Alternating current is characterized by constant intensity and direction.
(variable)
- 7- Oxidation is a chemical process in which an atom gains one electron or more.
(reduction)
- 8- In positive catalysts reaction, catalyst is used to slow down the chemical reaction.
(negative catalysts)
- 9- The acquired traits are transmitted from a generation to another. (hereditary)
- 10- Genes are parts of DNA found in the cytoplasm of the cell. (nucleus)
- 11- Dwarfism is a disease caused by decreasing of secretion in the calcitonin hormone.
(growth)
- 12- On heating copper hydroxide, we obtain copper and hydrogen.
(copper oxide – water vapor)
- 13- The attached ear lobe from dominant hereditary trait. (free)
- 14- In the electric cell the kinetic energy changes to electric energy. (chemical)
- 15- Mendel removed the petals of pea flowers to prevent self-pollination.(stamen)
- 16- The radioactive phenomenon was discovered by the scientist ohm. (Becquerel)
- 17- The Ammeter is connected in parallel in the electric circuit. (Voltmeter)
- 18- The skin color is an acquired trait. (hereditary)
- 19- On fearing and anger, the secretion of thyroxin hormone increases. (adrenalin)
- 20- The pure individual who carries a pair of genes, one of dominant character and another of recessive character. (hybrid)
- 21- The measuring unit of absorbed nuclear radiation is the volt. (Sievert)
- 22- Thyroid gland secretes a hormone that organizes the growth and development of sexual organs in the human body. (pituitary)
- 23- Some chemical reactions are very slow takes millions of years as iron rust.
(petroleum oil)

- 24- Mendel's first law is known as the law of independent assortment of factors.
(segregation)
- 25- From the recessive traits in the pea plant the swollen pod shape. (sinuous)
- 26- Mendel chose ten hereditary traits in the pea plant to perform his experiments.
(7)
- 27- From military uses for the nuclear energy in medical field to treat some diseases.
(peaceful)
- 28- By using 3gm of catalyst in an experiment. Its mass after finishing the reaction is less than 3gm. (equal)
- 29- Rate of reaction of the dilute hydrochloric acid with iron filing is slower than that with the same mass of a piece of iron. (faster)
- 30- Gigantism is a disease caused by increasing of secretion in the insulin hormone.
(growth)
- 31- Metals substitute oxygen of acid (water) to produce the metal hydroxide.
(hydrogen)
- 32- The measuring unit of the electromotive force for the electric cell is ampere.
(volt)
- 33- The iron rust is a fast chemical reaction. (fireworks)
- 34- The chemical energy can be converted to electrical energy by using the electric generator (dynamo). (mechanical)
- 35- Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas.
(oxygen)
- 36- Genes are parts of DNA found in the cytoplasm of the cell. (nucleus)
- 37- Hormones are secreted in the body by some organs called ductile glands.
(endocrine)
- 38- The transference of the electric charges between two conductors depends on the current intensity between the two conductors. (potential difference)
- 39- The estrogen hormone liberates the needed energy from the food stuff.
(thyroxin)
- 40- The reactions of the covalent compounds are fast. (slow)
- 41- The substance which loses one or more electrons in the chemical reaction is called catalysts. (reducing agent)
- 42- On adding sodium hydroxide solution to copper sulphate solution, blue sodium sulphate is formed. (colorless)
- 43- The reactions which take place inside the Earth to form iron rust may take millions of years. (petroleum oil)

- 44- Current intensity is the state of an electric conductor that shows the transfer of electricity from or to it, when it is connected to another conductor. (electric potential)
- 45- Estrogen hormone promotes the growth of endometrium. (progesterone)
- 46- When the blood sugar level decreases, the pancreas secretes the insulin hormone.
(glucagon)
- 47- Genes are DNA parts present on the protein in the nucleus of the cell.
(chromosomes)
- 48- The maximum safe dose of nuclear radiation which should a public not exceed 20 milli Sievert per year. (1)
- 49- The iron element shares in composing of thyroxin hormone. (iodine)
- 50- Adrenalin hormone promotes the growth of endometrium. (progesterone)
- 51- On adding a piece of magnesium to copper sulphate solution, a black precipitates is formed. (red)
- 52- The reactions of ionic compounds are slower than those of the covalent compounds.
(faster)
- 53- Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas.
(oxygen)
- 54- On decreasing of sugar level in the blood, the liver responds by secreting glucagon hormone. (pancreas)
- 55- The ionic compounds are fast in their reactions, because they decompose into molecules that easily share in the reaction. (ions)
- 56- When we add silver nitrate solution to sodium chloride solution, a black precipitate is formed. (white)
- 57- The electromotive force of three similar cells connected in parallel is twice the electromotive force of one cell. (equal)
- 58- The radioactivity phenomenon was discovered by the scientist Mendel.
(Becquerel)
- 59- Rate of chemical reaction depend on the concentration of the products.
(reactants)
- 60- Mendel's first law is known as the law of independent assortment of factors.
(segregation)
- 61- Dynamo converts light energy into electric energy. (mechanical)
- 62- The electric current intensity is directly proportional to the resistance at constant temperature. (potential difference)
- 63- The traits that are not transmitted from one generation to another are called genetic traits. (acquired)

- 64- The testosterone hormone responsible for the appearance of the female secondary sex characters. (male)
- 65- The electric current that produced from the dynamo flows in one direction.
(dry cell)
- 66- Each chromosome produces a special enzyme which is responsible for producing a special type of proteins. (gene)
- 67- Mendel's second law is called the law of segregation of factors.
(independent assortment)
- 68- The nuclei of radioactive elements contain number of protons more than the number required for its stability. (neutrons)
- 69- The estrogen hormone is secreted on increasing percentage of glucose sugar in the blood. (insulin)
- 70- For public, the maximum safe dose of nuclear radiation should not exceed 20 milli Sievert per year. (1)
- 71- Voltmeter is connected in the electric in series. (parallel)
- 72- Pituitary gland exists below the pancreas. (brain)
- 73- Ohmmeter is used to measure the current intensity. (Ammeter)
- 74- Thyroid gland exists in the front of the kidney on both sides of the ureter.
(neck - trachea)
- 75- Adrenal gland located adhering to the top of pancreas. (kidney)
- 76- Thyroxin hormone stimulates body's organs to respond to emergencies as fear and anger. (adrenalin)

Give reasons for:

1. Disappearance of the color of blue copper sulphate by putting a piece of magnesium.
Bec. (Mg) comes before (Cu) in C.A.S. so it replaces (Cu) forming colorless (MgSO₄) and red (Cu) p.p.t.
2. A blood is only way for the hormone to reach its site of action (target cells).
Bec. The target cells are located away from endocrine gland.
3. A continuous growth in the limb's bones of some persons so the person becomes a giant.
Due to increase of growth hormone at childhood.
4. Mendel selected the pea plant to conduct his experiments.
Bec. It is easy to planted – its life cycle is short – it produces large numbers of plants.
5. Pituitary gland is called the master gland.
Bec. It secretes hormones that regulate the activities of most of other endocrine glands.
6. Copper and gold does not react with diluted hydrochloric acid.
Bec. Copper and gold comes after hydrogen in C.A.S.
7. Genes control the appearance of hereditary traits of the individual.
Bec. Each gene gives a special enzyme which makes protein for specific trait.
8. Uranium element is considered from radioactive elements.
Bec. It produces radiation as its nucleus has neutrons more than required for stability.
9. The fridge is used to preserve food.
Bec. Coldness slow down speed of chemical reaction and bacteria
10. Learn to walk in children is not considered a genetic trait.
Bec. It's acquired trait can't be transmitted from a generation to another.
11. Not keeping silver nitrate solution in Aluminum can.
Bec. (Al) comes before (Ag) in C.A.S so it replaces silver lead to eroding of can.
12. Sliding rheostat is used in some electric circuits.
13. To controls current intensity and potential difference.
14. Some electric cells are connected in the electric circuits in series.
To obtain a battery with high e.m.f. .
15. The speed of chemical reaction increases by increasing the concentration of reactants.
16. Due to increase number of collision between reactants molecules.
17. It is preferable to use alternating electric current instead of direct electric current.
18. Bec. It can be transmitted for long distances and can be changed into a direct current.
19. The free ear lobe trait dominates the attached ear lobe trait.
20. Bec. The gene of free ear lobe dominant over the gene of attached ear lobe.
21. Nuclear radiation has genetic effects.
Bec. It changes in sex chromosomes composition cause abnormal birth.
22. Pancreas is a double function gland.
Bec. It secretes insulin hormone and glucagon hormone each one has opposite function to the other.

23. The rate of the chemical reaction increases by increasing temperature.

Due to increase number of collision between reactants molecules.

24. Sodium is from the reducing agents while chlorine is from the oxidizing agent.

25. Bec. (Na) atom loses electron while (Cl) atom gain electron in chemical reaction.

26. The ability to roll the tongue is one of the dominant traits in the human being.

Bec. The gene of ability to roll tongue dominant over the gene of inability to roll tongue.

27. Reactions between ionic compounds are fast than covalent compound.

Bec. Reaction of ionic compounds occurs between ions while covalent between molecules.

28. The rate of the reaction of hydrochloric acid with iron filings is faster than iron piece.

29. Bec. Speed of chemical reaction increase By increase surface area of reactants.

30. Some people suffer from simple goiter.

Due to the decrease in secretion of thyroxin hormone.

31. Alternating current is often preferred than the direct current.

Bec. It can be transmitted for long distances and can be changed into a direct current.

32. The variable resistance used in some electric circuits.

To controls current intensity and potential difference.

33. The voltmeter is connected across the two poles of a battery.

To measure the electromotive force of the battery.

34. Oxidation and reduction are concurrent processes.

35. Bec. Number of lost electrons in oxidation = number of gained electrons in reduction

36. Chemical reactions are very important to us.

Bec. They important for fuel burning, photosynthesis and medicines products.

37. A white precipitate is formed on adding silver nitrate solution to sodium chloride solution.

Due to formation of silver chloride which doesn't dissolve in water.

38. Mendel covers the stigmas of the pistils of pea flowers during studying the character of seed's color.

To prevent cross-pollination.

39. The two adrenal glands have important role.

Bec. They secrete adrenalin hormone activate body to respond to emergencies.

40. Burning steel in pure oxygen is faster than in atmospheric air.

Bec. Speed of chemical reaction increase By increase concentration of reactants.

41. The radioactive wastes should be buried away from underground water path.

To avoid water pollution.

42. When a yellow pod pea plant is pollinated with a green pod pea plant, they produce green pods.

Bec. Green pod trait dominant over yellow pod trait according to principle of complete dominance.

43. A red precipitate is formed when magnesium is added to copper sulphate solution.

Bec. (Mg) comes before (Cu) in C.A.S. so it replaces (Cu) forming colorless (MgSO₄) and red (Cu) p.p.t.

44. Crossing between dominant trait and recessive trait may give 1 : 1 ratio.

Bec. Dominant parent have hybrid trait.

45. Adding a piece of sweet potato in the decomposition of hydrogen peroxide.

Bec. Oxidase enzyme acts as catalyst increase decomposition of hydrogen peroxide.

46. Hormones are secreted in the body by some organs called endocrine glands (ductless gland).

Bec. They secrete their hormones directly to the blood.

47. In the reaction : $H_2 + CuO \rightarrow Cu + H_2O$ hydrogen is considered as a reducing agent, while copper oxide is considered as an oxidizing agent.

Bec. Hydrogen takes oxygen away while copper oxide gives oxygen.

48. In the reaction: $2Na + Cl_2 \rightarrow 2NaCl$ sodium is considered as a reducing agent, while chlorine is considered as an oxidizing agent.

Bec. (Na) atom loses electron while (Cl) atom gain electron in chemical reaction.

49. Oxidation and reduction are concurrent processes.

Bec. Number of lost electrons in oxidation = number of gained electrons in reduction

43. The areas chosen for storing radioactive wastes should be stable.

To prevent the spread of radiation to other areas.

44. Mendel is considered as the founder of hereditary.

Bec. He studied how hereditary traits transmitted from one generation to another.

45. Skin color is one of hereditary traits.

Bec. It can be transmitted from one generation to another.

46. Mendel removes the stamen of pea flowers during studying the character of seed's color.
To prevent self-pollination.

47. Some electric cells are connected in the electric circuits in parallel.

To obtain a battery with low e.m.f. .

Illustrate by balanced chemical equations the following reactions:

1. The effect of heat on red mercury oxide.
2. The effect of heat on blue copper hydroxide.
3. The thermal decomposition of copper carbonate.
4. The effect of heat on blue copper sulfate.
5. The effect of heat on sodium nitrate.
6. The reaction of water with sodium (what are the required precautions for the reaction?).
7. The reaction of zinc with dilute hydrochloric acid.
8. Adding of aluminium turnings to dilute hydrochloric acid.
9. Insertion of a magnesium ribbon into a solution of copper sulfate.
10. The reaction of hydrochloric acid with sodium hydroxide
(What is the name of the reaction?)
11. Adding calcium hydroxide solution to dilute hydrochloric acid.
12. The reaction of sodium carbonate with dilute hydrochloric acid.

13. Adding silver nitrate solution to sodium chloride solution.

14. Reduction of hot copper oxide by passing hydrogen gas.

15. A reaction in which an atom of element acquires one electron or more.

16. A reaction in which an atom of element loses one electron or more.

What happens when?

1. Putting a piece of magnesium in copper sulphate solution.

Color of copper sulphate disappears and red copper p.p.t. is formed.

2. Exposing a man for large dose of nuclear radiation for a short period of time.

It damage of bone marrow, digestive and nervous system.

3. Ammeter and voltmeter reading in a circuit if the resistance is burnt.

Ammeter reading = 0, voltmeter reading = e.m.f. of battery.

4. Heating red mercuric oxide.

A silvery p.p.t. of mercury is formed and oxygen gas evolves.

5. The amount of growth hormone decreased in the childhood.

The person becomes dwarf.

6. Change the chemical composition of the hemoglobin of the blood.

It will be unable to carry oxygen to the cells.

7. Putting a piece of sweet potato in a flask has hydrogen peroxide.

The speed of chemical reaction increases.

8. Mendel leave the stigmas of pea plant without covering.

Cross pollination will occur.

9. Adding a piece of sodium to water.

It forms sodium hydroxide and hydrogen gas evolves with pop sound.

10. Adding silver nitrate solution to sodium chloride solution.

A white p.p.t. of silver chloride is formed.

11. Two charged conductors connected one of them has high electric potential .

Electric current flow from high to low potential conductor.

12. Pancreas stopped secreting glucagon hormone.

The level of glucose sugar in blood decreases.

13. Replacing a piece of iron with iron filings in a reaction with diluted acid.

The speed of chemical reaction increases.

14. Increase of potential difference at constant resistance.
Electric current intensity increases.
15. Heating green copper carbonate.
A black substance of copper oxide is formed and CO₂ gas evolves.
16. Exposing a man for small dose of nuclear radiation for a long time.
It causes physical, genetics and cellular effects on human.
17. Increase in the concentration of the reactants.
The speed of chemical reaction increases.
18. When the radiation affects on cellular effects of the body.
They change cell composition cause destroy cells.
19. When the individual carries a recessive gene from both parents.
The recessive trait appears.
20. Mating between two pure individuals in different pair of contrasting traits.
They produce generation carries hybrid dominant trait only.
21. Adding hydrochloric acid to sodium carbonate salt.
It produces sodium chloride, water and CO₂ gas turbid lime water.
22. Increase the resistance (wire length) in the rheostat (variable resistance).
Electric current intensity and potential difference decreases.
23. Adding manganese dioxide to hydrogen peroxide.
The speed of chemical reaction increase.
24. Increasing surface area of the reactants.
The speed of chemical reaction increase.
25. Iodine and thyroxin hormone decrease in the food of the man.
It causes simple goiter for man.
26. The atom has number of neutrons more than number for stability.
It emits radiation to reach a more stable composition.
27. Cross-pollination between two pure pea plant one yellow pod and the other with green pod.
All the produced pea plants are hybrid green pods.
28. When the radiation affects on genetic effects of the body.
They change sex chromosomes composition cause abnormal birth.

Mention ONE use – importance - of each of the following :

- 1- The alternating electric current. (lighting houses –electric appliances)
- 2- The direct electric current. (electroplating – some electric appliances)
- 3- Nuclear energy in the agricultural field. (eliminate pests – improve plant races)
- 4- Adrenal gland. (secrete adrenalin hormone to respond body to emergencies)
- 5- Variable resistance (the sliding rheostat).
(control current intensity and potential difference)
- 6- Oxidase enzyme in sweet potato. (speed up decomposition of Hydrogen peroxide)
- 7- Nuclear energy in the industrial field.
(convert sand to silicon sheets used in computer)
- 8- Radioactive elements – nuclear energy- in the medical field.
(to treat diseases like cancer)
- 9- Putting manganese dioxide in some chemical reaction.
(as catalyst speed up decomposition of H_2O_2)
- 10- The genetically modified rice. (provide body with vitamin A to keep the sight)
- 11- Electrochemical cells. (used to obtain direct current)
- 12- Calcitonin hormone. (control level of calcium in blood)
- 13- Progesterone hormone. (promotes growth of endometrium)
- 14- Insulin hormone. (decrease level of glucose sugar in blood)
- 15- Enzymes. (act as a catalyst speed up chemical reaction)
- 16- Thyroxin hormone. (liberates energy from food assimilation)
- 17- Catalysts. (change the rate – speed of chemical reaction)
- 18- Ammeter. (measure electric current intensity)
- 19- Voltmeter. (measure potential difference and e.m.f.)
- 20- Ohmmeter. (measure electric resistance)
- 21- Connection of dry cells in series. (to obtain high e.m.f. for battery)
- 22- Connection of dry cells in parallel. (to obtain low e.m.f. for battery)
- 23- Nuclear energy in the electricity generation field.
(to heat water to produce steam to operate turbines to generate electricity)
- 24- Nuclear energy in the space exploration field.

(used as nuclear fuel for rockets)

25- Nuclear energy in the drilling field.

(for drilling of petroleum and underground water)

26- Genes. (control appearance of hereditary traits)

Compare between each of the following :

- 1- Metal oxide and metal hydroxide (according to thermal decomposition).
- 2- Hereditary traits and acquired traits (according to : Def. - example).
- 3- Oxidizing agent and reducing agent (according to gaining or losing electrons).
- 4- Oxidation and reduction process.
- 5- Covalent and ionic compounds (according to the speed of chemical reaction).
- 6- Direct and alternating current (in intensity and direction).
- 7- Ammeter and voltmeter (according to method of connection).
- 8- The wide eyes trait and the narrow eyes trait (according to type of each trait).
- 9- Direct and alternating current (in view of the field using).
- 10- Gigantism and dwarfism (according to the reason).
- 11- Direct and alternating current (according to source of each).
- 12- Testes and ovaries glands (according to the secreted hormone).
- 13- Natural and artificial resources of nuclear radiation pollution (example of each).
- 14- The importance of testosterone and progesterone hormones.
- 15- The dominant trait and recessive trait (according to definition).
- 16- Unit of measuring current intensity and potential difference(according to definition)

- 17- Genetic and cellular effects of nuclear radiation.
- 18- Simple and exophthalmic goiter (according to reason of each).
- 19- Thyroxin and Calcitonin hormones (according to their function)

What is the meant by – Define each of the following :

1- The principle of complete dominance.

2- The potential difference.

3- Genes.

4- Hormones.

5- The ampere.

6- The volt.

7- The ohm.

8- The catalyst.

9- Mendel's second law.

10- Mendel's first law.

11- Electric potential of conductor.

12- Chemical reaction.

13- The chemical activity series.

14- Nuclear binding force.

15- The human genome.

16- Neutralization reaction.

17- Radioactivity.

- 18- The resistance of conductor.**
- 19- Electric current intensity.**
- 20- Ohm's law.**
- 21- Electromotive force.**
- 22- Radioactive elements.**
- 23- Isotopes.**
- 24- Thermal decomposition reaction.**

Solve the following problems:

1- Calculate the current intensity that flow through a wire if the electric charge equals 20 coulombs in a time 4 seconds.

2- Calculate the current intensity that flow through a wire if the electric charge equals 180 coulombs through 2 minutes.

3- Calculate the amount of charges that flow through a wire if the electric intensity equals 6 amperes through 2 seconds.

4- Calculate the amount of charges that flow through a wire if the electric intensity equals 10 amperes through 1 hour.

5- If an electric heater connected to a source of electric current its intensity =2 ampere. Calculate the amount of charges that flow through a wire in 4.2 seconds.

6- If an electric heater connected to a source of electric current its intensity =2 ampere. Calculate the amount of charges that flow through a wire in 4.2 seconds.

7- Calculate the time of transferring of electric charges = 10 coulombs in an electric circuit if the current intensity = 5 amperes.

8- Calculate the time of transferring of electric charges = 60 coulombs in an electric circuit if the current intensity = 0.25 amperes.

9- Calculate the potential difference between two terminals of the wire when the work done to transfer electric charge is 8 coulomb = 32 joules.

10- Calculate the work done to transfer electric charge is 50 coulomb if the potential difference between two terminals of the wire = 12 volts.

12- Calculate the work done by a battery its e.m.f = 12 volts to transfer an electric charge of 2.5 coulomb in an electric circuit.

13- Calculate the potential difference between two points when the work done = 12 joule to transfer an electric charges = 3 coulombs and if time for this = 0.5 minute what is the current intensity?

14- If the potential difference between the two poles of a phone = 24 volts, what is the electric resistance of the phone wires if the current intensity is 0.03 ampere.

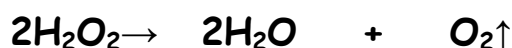
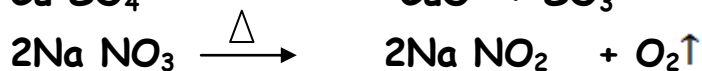
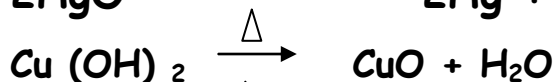
15- An electric appliance works with a potential difference 220 volts and electric resistance 20 Ohm. Calculate the current intensity and the amount of electric charges through 5 seconds.

Write the name of each of the following symbols. And write the use of each one.

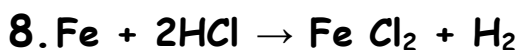
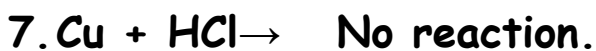
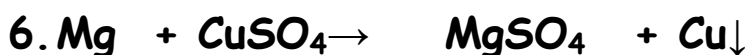
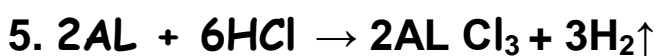
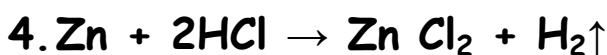
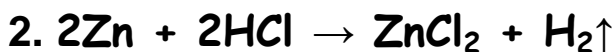
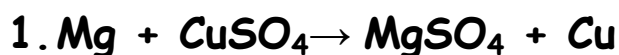


Chemical Equations

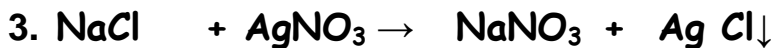
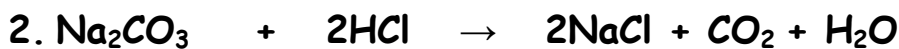
1st Thermal Decomposition Reaction



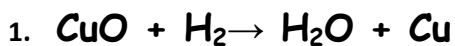
2nd Simple Substitution Reaction



3rd Double Substitution Reactions



4th Oxidation Reduction Reactions



Write the scientific term for each of the following statements :

1. The breaking up of bonds in reactants and forming of new bonds in the products.
(-----)
2. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (-----)
3. Chemical reactions in which a catalyst speed up their rate. (-----)
4. The arrangement of metallic elements in a descending order according to their chemical activity. (-----)
5. The force that binds the nucleus components and overcomes the repulsion force between the positively charged protons. (-----)
5. The change in concentration of the reactants and products at a unit time.
(-----)
6. Reaction between acid and alkali (base) forming salt and water. (-----)
7. A chemical process which increase oxygen percentage in the substance.
(-----)
8. A chemical process which decrease oxygen percentage in the substance.
(-----)
9. A disease that occurs due to increase in secretion of thyroxin hormone.
(-----)
10. They are chemical reactions which involve the breaking up of the compound into its simple elements or compounds by the effect of heat. (-----)
11. It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor. (-----)
12. Elements whose atom's nuclei contain a number of neutrons more than the number required for its stability. (-----)
13. The flow of electric negative charges in a conducting material. (-----)
14. The characters transmitted from one generation to another. (-----)
15. The traits which are not transmitted from one generation to another. (-----)
16. They are parts of DNA on the chromosomes and control the hereditary traits of the individual. (-----)
17. Spontaneous decaying of the atom's nuclei of some elements to achieve more stable composition. (-----)
18. It is the quantity of electric charges in coulomb flowing through a cross-section of the conductor in one second. (-----)
19. Ductless glands that secrete their hormones directly in the blood. (-----)
20. The state of a conductor that determines the transfer of electricity from or to it.
(-----)

21. The charge that transfers with a constant electric current its intensity one ampere in one second. (-----)
22. Chemical message that control and organizes most of the vital activities and function in the body organs. (-----)
23. A substance which increases rate of chemical reactions without being consumed. (-----)
24. The appearance of a dominant hereditary trait in individuals of first generation when two individuals crossed, one of them carrying pure hereditary trait contrasting trait carried by the other individual. (-----)
25. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (-----)
26. Organs secrete hormones directly into blood stream. (-----)
27. The substance formed by gene and it is responsible for occurrence of a certain chemical reaction. (-----)
28. The substance which gives oxygen or take hydrogen away during a chemical reaction. (-----)
29. The trait that appears in all individuals of the first generation in Mendel's experiments. (-----)
30. Chemical reactions in which an element substitutes another one. (-----)
31. The potential difference between the two poles of the battery when the electric circuit is open. (-----)
32. The hormone which secreted from the pituitary gland to controls the speed rate of growth of muscles and bones. (-----)
33. The change that appear on a living organism when exposed to nuclear radiations. (-----)
34. The individual who carries two genetic factors one of the dominant trait and the other of the recessive trait. (-----)
35. The resistance of a conductor that allows the passing of electric current of 1 ampere through it when the potential difference between its two ends is 1 volt. (-----)
36. The hormone which is responsible for the appearance of the secondary male sex characters. (-----)
37. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (-----)
38. The measuring unit for absorbed nuclear radiation. (-----)
39. A chemical process in which an atom of the element gains one electron or more. (-----)
40. The science that research in the similarities and difference between the individuals in the same species. (-----)

41. Chemical reactions in which exchange occurs between the ions of two compounds to form two new compounds. (-----)
42. The individual who carries a similar pair of hereditary genes whether dominant or recessive. (-----)
43. An increase or decrease of secretion in one of the hormones as the responsible gland doesn't work properly. (-----)
44. The trait that disappeared in the first generation. (-----)
45. Chemically consists of a nucleic acid DNA combined with proteins. (-----)
46. The opposition that the electric current faces during its passage through a conductor. (-----)
47. A disease caused as a result of decreasing the secretion of the growth hormone at the childhood. (-----)
48. The trait which are unable to transmit from a generation to another. (-----)
49. An electric current is suitable for use in electroplating processes. (-----)
50. An electric current is not suitable for use in electroplating processes. (-----)
51. The cells which the hormones affect and they are located away from the endocrine gland that secretes hormone. (-----)
52. The cells by which the hereditary traits are transmitted from parents to offspring. (-----)
53. They are chemical substance produced by the body of living organism act as a catalysts that increase the speed of biological reactions. (-----)
54. It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor. (-----)
55. The substance which loses one electron or more during a chemical reaction. (-----)
56. The enzyme which is found in sweet potato and accelerates the decomposition rate of hydrogen peroxide. (-----)
57. The metallic can exists in most modern cars to treat the harmful gases emitted from the engine. (-----)
58. Parts of DNA that are present on the chromosomes and carry the hereditary traits of the individual. (-----)
59. The opposition that the electric current faces during its passage through a conductor. (-----)
60. Special structure by which hereditary traits transferred from parents to offspring. (-----)
61. Used in some electric circuits to control current intensity as the resistance directly proportional with the length of wire. (-----)
62. Chemical reactions in which a catalyst decrease their rate. (-----)

63. The substance which gives oxygen or takes hydrogen away during a chemical reaction. (-----)
64. The hormone that is responsible for the appearance the male secondary sex characters. (-----)
65. A chemical process in which an atom loses one electron or more in a chemical reaction. (-----)
66. It is an electric current with constant intensity and flow in one direction through the electric circuit. (-----)
67. The substance which gains one electron or more during a chemical reaction. (-----)
68. The substance which takes oxygen away or gives hydrogen during a chemical reaction. (-----)
69. They are changes in the sex chromosomes composition which result in abnormal birth. (-----)
70. They are changes in the cell composition which lead to destroying the cells. (-----)
71. They are atoms of the same element with the same number of protons and with different number of neutrons. (-----)
72. It is an electric current with variable intensity and flow in two opposite directions through the electric circuit. (-----)
73. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature. (-----)
74. It is the quantity of electric charges in coulomb flowing through a cross-section of the conductor in one second. (-----)
75. They are chemical reactions which involve the breaking up of the compound into its simple elements or compounds by the effect of heat. (-----)
76. The device used to measure the electric current intensity. (-----)
77. The device used to measure the potential difference of a conductor. (-----)
78. The device used to measure the electromotive force of the battery. (-----)

Give reasons for:

1. Disappearance of the color of blue copper sulphate by putting a piece of magnesium.

2. A blood is only way for the hormone to reach its site of action (target cells).

3. A continuous growth in the limb's bones of some persons so the person becomes a giant.

4. Mendel selected the pea plant to conduct his experiments.

5. Pituitary gland is called the master gland.

6. Copper does not react with diluted hydrochloric acid.

7. Genes control the appearance of hereditary traits of the individual.

8. Uranium element is considered from radioactive elements.

9. The fridge is used to preserve food.

10. Learn to walk in children is not considered a genetic trait.

11. Not keeping silver nitrate solution in Aluminum can.

12. Sliding rheostat is used in some electric circuits.

13. Some electric cells are connected in the electric circuits in series.

14. The speed of chemical reaction increases by increasing the concentration of reactants.

15. It is preferable to use alternating electric current instead of direct electric current.

16. The free ear lobe trait dominates the attached ear lobe trait.

17. Nuclear radiation has genetic effects.

18. Pancreas is a double function gland.

19. The rate of the chemical reaction increases by increasing temperature.

20. Sodium is from the reducing agents while chlorine is from the oxidizing agent.

21. The ability to roll the tongue is one of the dominant traits in the human being.

22. Reactions between ionic compounds are fast than covalent compound.

23. The rate of the reaction of hydrochloric acid with iron filings is faster than iron piece.

24. Some people suffer from simple goiter.

25. Alternating current is often preferred than the direct current.

26. The variable resistance used in some electric circuits.

27. The voltmeter is connected across the two poles of a battery.

28. Oxidation and reduction are concurrent processes.

29. Chemical reactions are very important to us.

30. A white precipitate is formed on adding silver nitrate solution to sodium chloride solution.

31. Mendel covers the stigmas of the pistils of pea flowers during studying the character of seed's color.

32. The two adrenal glands have important role.

33. Burning steel in pure oxygen is faster than in atmospheric air.

34. The radioactive wastes should be buried away from underground water path.

35. When a yellow pod pea plant is pollinated with a green pod pea plant, they produce green pods.

36. A red precipitate is formed when magnesium is added to copper sulphate solution.

37. Crossing between dominant trait and recessive trait may give 1 : 1 ratio.

38. Adding a piece of sweet potato in the decomposition of hydrogen peroxide.

39. Hormones are secreted in the body by some organs called endocrine glands (ductless gland).

40. In the reaction : $\text{H}_2 + \text{CuO} \rightarrow \text{Cu} + \text{H}_2\text{O}$ hydrogen is considered as a reducing agent, while copper oxide is considered as an oxidizing agent.

41. In the reaction: $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$ sodium is considered as a reducing agent, while chlorine is considered as an oxidizing agent.

42. Oxidation and reduction are concurrent processes.

43. The areas chosen for storing radioactive wastes should be stable.

Illustrate by balanced chemical equations the following reactions:

1. The effect of heat on red mercury oxide.
2. The effect of heat on blue copper hydroxide.
3. The thermal decomposition of copper carbonate.
4. The effect of heat on blue copper sulfate.
5. The effect of heat on sodium nitrate.
6. The reaction of water with sodium (what are the required precautions for the reaction?).
7. The reaction of zinc with dilute hydrochloric acid.
8. Adding of aluminium turnings to dilute hydrochloric acid.
9. Insertion of a magnesium ribbon into a solution of copper sulfate.
10. The reaction of hydrochloric acid with sodium hydroxide
(What is the name of the reaction?)
11. Adding calcium hydroxide solution to dilute hydrochloric acid.
12. The reaction of sodium carbonate with dilute hydrochloric acid.
13. Adding silver nitrate solution to sodium chloride solution.
14. Reduction of hot copper oxide by passing hydrogen gas.
15. A reaction in which an atom of element acquires one electron or more.
16. A reaction in which an atom of element loses one electron or more.

What happens when?

1. Adding silver nitrate solution to sodium chloride solution.

2. The pancreas decreases its secretion of the insulin hormone.

3. Heating a red mercuric oxide.

4. Chlorine atom gains an electron.

5. A group of electric cells are connected in series (related to the e.m.f.)

6. The length of the rheostat wire increases (to the electric current).

7. Two electrically charged conductors of different electric potential are connected by a wire.

8. Adding dilute HCl to a piece of copper.

9. Adding a piece of sodium to water.

10. The time of flowing the electric charges through a certain cross-section of a conductor is doubled.

11. A pea plant of short stem is pollinated by another of hybrid tall stem.

12. An individual is exposed repeatedly to X-rays.

13. The man's thyroxin hormone increases.

14. The pancreas decreases its secretion of the insulin hormone.

15. Exposing a man for a large dose of atomic radiation for a short period of time

Rewrite the following statement after correcting the underline word :

- 1- Mendel's second law is called the law of segregation of factors. (-----)
- 2- Most metal carbonates decompose by heat to metal oxide and nitrogen gas evolves. (-----)
- 3- The reactions of ionic compounds are slower than those of the covalent compounds. (-----)
- 4- Estrogen hormone promotes the growth of endometrium. (-----)
- 5- Ohm is the measuring unit for absorbed nuclear radiation. (-----)
- 6- Alternating current is characterized by constant intensity and direction. (-----)
- 7- Oxidation is a chemical process in which an atom gains one electron or more. (-----)
- 8- In positive catalysts reaction, catalyst is used to slow down the chemical reaction. (-----)
- 9- The acquired traits are transmitted from a generation to another. (-----)
- 10- Genes are parts of DNA found in the cytoplasm of the cell. (-----)
- 11- Dwarfism is a disease caused by decreasing of secretion in the calcitonin hormone. (-----)
- 12- On heating copper hydroxide, we obtain copper and hydrogen. (-----)
- 13- The attached ear lobe from dominant hereditary trait. (-----)
- 14- In the electric cell the kinetic energy changes to electric energy. (-----)
- 15- Mendel removed the petals of pea flowers to prevent self-pollination. (-----)
- 16- The radioactive phenomenon was discovered by the scientist ohm. (-----)
- 17- The Ammeter is connected in parallel in the electric circuit. (-----)
- 18- The skin color is an acquired trait. (-----)
- 19- On fearing and anger, the secretion of thyroxin hormone increases. (-----)
- 20- The pure individual who carries a pair of genes, one of dominant character and another of recessive character. (-----)
- 21- The measuring unit of absorbed nuclear radiation is the volt. (-----)
- 22- Thyroid gland secretes a hormone that organizes the growth and development of sexual organs in the human body. (-----)
- 23- Some chemical reactions are very slow takes millions of years as iron rust. (-----)
- 24- Mendel's first law is known as the law of independent assortment of factors. (-----)
- 25- From the recessive traits in the pea plant the swollen pod shape. (-----)

- 26- Mendel chose ten hereditary traits in the pea plant to perform his experiments.
(-----)
- 27- From military uses for the nuclear energy in medical field to treat some diseases.
(-----)
- 28- By using 3gm of catalyst in an experiment. Its mass after finishing the reaction is less than 3gm. (-----)
- 29- Rate of reaction of the dilute hydrochloric acid with iron filing is slower than that with the same mass of a piece of iron. (-----)
- 30- Gigantism is a disease caused by increasing of secretion in the insulin hormone.
(-----)
- 31- Metals substitute oxygen of acid (water) to produce the metal hydroxide.
(-----)
- 32- The measuring unit of the electromotive force for the electric cell is ampere.
(-----)
- 33- The iron rust is a fast chemical reaction. (-----)
- 34- The chemical energy can be converted to electrical energy by using the electric generator (dynamo). (-----)
- 35- Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas.
(-----)
- 36- Genes are parts of DNA found in the cytoplasm of the cell. (-----)
- 37- Hormones are secreted in the body by some organs called ductile glands.
(-----)
- 38- The transference of the electric charges between two conductors depends on the current intensity between the two conductors. (-----)
- 39- The estrogen hormone liberates the needed energy from the food stuff.
(-----)
- 40- The reactions of the covalent compounds are fast. (-----)
- 41- The substance which loses one or more electrons in the chemical reaction is called catalysts. (-----)
- 42- On adding sodium hydroxide solution to copper sulphate solution, blue sodium sulphate is formed. (-----)
- 43- The reactions which takes place inside the Earth to form iron rust may take millions of years. (-----)
- 44- Current intensity is the state of an electric conductor that shows the transfer of electricity from or to it, when it is connected to another conductor. (-----)
- 45- Estrogen hormone promotes the growth of endometrium. (-----)

- 46- When the blood sugar level decreases, the pancreas secretes the insulin hormone.
(-----)
- 47- Genes are DNA parts present on the protein in the nucleus of the cell.
(-----)
- 48- The maximum safe dose of nuclear radiation which should a public not exceed 20 milli Sievert per year. (-----)
- 49- The iron element shares in composing of thyroxin hormone. (-----)
- 50- Adrenalin hormone promotes the growth of endometrium. (-----)
- 51- On adding a piece of magnesium to copper sulphate solution, a black precipitate is formed. (-----)
- 52- The reactions of ionic compounds are slower than those of the covalent compounds.
(-----)
- 53- Nitrogen pentoxide breaks up into nitrogen dioxide gas and nitrogen gas.
(-----)
- 54- On decreasing of sugar level in the blood, the liver responds by secreting glucagon hormone. (-----)
- 55- The ionic compounds are fast in their reactions, because they decompose into molecules that easily share in the reaction. (-----)
- 56- When we add silver nitrate solution to sodium chloride solution, a black precipitate is formed. (-----)
- 57- The electromotive force of three similar cells connected in parallel is twice the electromotive force of one cell. (-----)
- 58- The radioactivity phenomenon was discovered by the scientist Mendel.
(-----)
- 59- Rate of chemical reaction depend on the concentration of the products.
(-----)
- 60- Mendel's first law is known as the law of independent assortment of factors.
- 61- Dynamo converts light energy into electric energy. (-----)
- 62- The electric current intensity is directly proportional to the resistance at constant temperature. (-----)
- 63- The traits that are not transmitted from one generation to another are called genetic traits. (-----)
- 64- The testosterone hormone responsible for the appearance of the female secondary sex characters. (-----)
- 65- The electric current that produced from the dynamo flows in one direction.
(-----)

- 66- Each chromosome produces a special enzyme which is responsible for producing a special type of proteins. (-----)
- 67- Mendel's second law is called the law of segregation of factors. (-----)
- 68- The nuclei of radioactive elements contain number of protons more than the number required for its stability. (-----)
- 69- The estrogen hormone is secreted on increasing percentage of glucose sugar in the blood. (-----)
- 70- For public, the maximum safe dose of nuclear radiation should not exceed 20 milli Sievert per year. (-----)
- 71- Voltmeter is connected in the electric in series. (-----)
- 72- Pituitary gland exists below the pancreas. (-----)
- 73- Ohmmeter is used to measure the current intensity. (-----)
- 74- Thyroid gland exists in the front of the kidney on both sides of the ureter.
(-----)
- 75- Adrenal gland located adhering to the top of pancreas. (-----)
- 76- Thyroxin hormone stimulates body's organs to respond to emergencies as fear and anger. (-----)

Gr: 9

Final Revision

Q:1- Choose :

- 1) Electrons are charged particles.
a) positively b) neutral **c) negatively** d) no correct answer
- 2) is the measuring unit of the electric charges.
a) coulomb b) Ampere c) volt d) no correct answer
- 3) Thehormone liberates the energy necessary for the body from food.
a) growth **b) thyroxin** c) estrogen d) glucagon
- 4) The two factors of a hereditary trait are similar in the individual.
a) pure b) hybrid c) recessive **d) pure & recessive**
- 5) is used to measure the e.m.f of a battery.
a) Voltmeter b) Ammeter c) Rheostat d) ohmmeter
- 6) is the measuring unit of electric resistance.
a) ohm b) volt c) ampere d) coulomb
- 7) As the length of rheostat wire increases, the current intensity
a) increases **b) decreases** c) constant d) (a) and (b)
- 8) The most active metal in the chemical activity series is
a) copper. **b) sodium.** c) hydrogen. d) aluminum.
- 9) The is used to control the resistance in the electric circuit.
a) rheostat b) ammeter c) voltmeter d) ohmmeter
- 10) To control the value of electric resistance in the electric circuit we use instrument.
a) ohmmeter **b) rheostat** c) voltmeter d) ammeter
- 11) Direct current can be produced from
a) electrochemical cells b) electric generators
c) electric power stations d) electric motors
- 12) In the simple cell the energy is converted into electric energy.
a) kinetic b) magnetic **c) chemical** d) mechanical
- 13) In dynamo, energy is converted into electric energy.
a) magnetic **b) kinetic** c) chemical d) light
- 14) Radioactive phenomenon was discovered by the scientist
a) ohm **b) Becquerel** c) Ampere d) volt
- 15) The measuring unit of the absorbed radiation is the
a) nanometer b) ampere **c) Sievert** d) ohm
- 16) Rockets use fuel for flying.
a) gasoline b) kerosene c) natural gas **d) nuclear**

- 17) Alternating current is used in
- a) electrolysis b) lighting house c) electroplating d) both (a)&(c)
- 18) The..... is chemically composed of the nucleic acid DNA combined with protein
- a) cytoplasm b) gene c) chromosome d) nucleotides
- 19) Thermal decomposition of copper carbonate gives
- a) copper + water. b) copper + carbon dioxide.
c) copper oxide + carbon dioxide. d) copper oxide + water vapor.
- 20) From the examples of electrochemical cells
- a) dry cell. b) dynamo. c) rheostat. d) ohmmeter.
- 21) From dominant traits in the human being are
- a) straight hair b) wide eye c) presence of freckles d) no dimples
- 22) The active metal can replace the hydrogen of water which rises and produces
- a) metal hydroxide. b) metal oxide.
c) metal carbonate. d) metal sulphate
- 23) At the beginning of the reaction, percentage of reactants concentration equals...
- a) 100% b) 50% c) 0% d) no correct answer
- 24) Mendel conducted his experiments in pea plant by using..... pairs of traits.
- a) 5 b) 7 c) 9 d) 11
- 25) The two factors of a hereditary trait are similar in the individual.
- a) pure b) hybrid c) recessive d) (a) and (c)
- 26) Which one of these traits is recessive in humans
- a) curly hair b) wide eyes c) free ear lobe d) straight hair
- 27) put the model of DNA molecule.
- a) ohm b) Mendel c) Watson d) Johansson
- 28) is the part of DNA in the cell nucleus.
- a) Gene b) Gamete c) Cytoplasm d) no correct answer
- 29) DNA molecule consists of strands.
- a) two b) three c) four d) five
- 30) The hormone which regulates the level of calcium in the blood is the hormone.
- a) calitonin b) thyroxin c) progesterone d) adrenalin
- 31) The hormone liberates the needed energy from the food stuff.
- a) growth b) estrogen c) thyroxin d) testosterone
- 32) Glucagon hormone is secreted by
- a) pituitary gland b) thyroid gland c) adrenal gland d) pancreas

33) It is chemically composed of the nucleus acid DNA combined with protein

- a) cytoplasm. **b) chromosome.** c) gene. d) nucleus.

34) is a non-radioactive element.

- a) Radium b) Uranium c) Zirconium **d) Iron**

35) All of the following are aims of the human genome project except.....

- a) obtaining desirable traits.** (useful)
b) understanding the human biology.
c) discovering all of the human genes.
d) identifying the single differences between one person and another.

36) The Sliding Rheostat is used to in the electric circuit.

- a) measure the current intensity b) measure the potential difference
c) change the resistance d) measure the electromotive force

37) If an electric current of 0.2 ampere passes in an electric heater and the potential difference between its two ends is 220 volts, the heater's resistance is Ohm

- a) 20 **b) 1100** c) 2200 d) 1000

38) The measuring unit of the electric current intensity is

- a) ohm. **b) ampere.** c) volt .coulomb. d) volt

39) When dil. hydrochloric acid is added to calcium carbonate gas is evolved.

- a) CO₂** b) H₂ c) O₂ d) CO

40) A process that involves the splitting of compounds into simpler compounds by the effect of electricity is called

- a) simple substitution b) thermal decomposition
c) electrolysis d) direct combination

41) The blue color of copper sulphate disappears and is formed by heating.

- a) black ppt b) red color c) yellow ppt **d) black color**

42) The following elements can replace hydrogen in dilute acids except...element

- a) Magnesium b) zinc **c) copper** d) sodium

43) The oxidizing agent is the compound which during the chemical reaction

- a) loses hydrogen b) gains oxygen c) loses oxygen **d) (a) and(b)**

44) White sodium nitrates decompose by heat into and oxygen.

- a) sodium nitrite** b) nitrogen c) sodium oxide d) ammonia

45) The percentage of hydrogen increases during reactions.

- a) neutralization b) oxidation **c) reduction** d) substitution

46) In the reaction between sodium and chlorine to form sodium chloride, the oxidizing agent is

- a) sodium **b) chlorine** c) sodium chloride d) (a) and(b)

- 62) The neutralization reaction occurs between
- a) metal and non-metal. b) acid and salt.
c) copper and carbon. **d) acid and alkali**
- 63) All the following units measuring the current intensity except
- a) ampere. b) coulomb / second. **c) joule / coulomb.** d) volt / ohm
- 64) One of the properties of the alternating current is
- a) constant intensity. b) constant direction.
c) variable direction and constant intensity. **d) variable intensity and direction**
- 65) The hormone which stimulates body organs to respond for emergencies is
- a) Insulin. b) Glucagon. **c) Adrenalin.** d) Estrogen.
- 66) Four similar electric cells are connected in series each one has e.m.f of 1.5 volt so the total e.m.f equal volt.
- a) 3 **b) 6** c) 1.5 d) 12
- 67) Radioactivity phenomenon was known by
- a) Ohm. **b) Becquerel.** c) Ampere. d) Faraday
- 68) Human beings should not be exposed to radiation in amounts more than milli Sievert in a day.
- a) 5 b) 8 c) 10 **d) 1**
- 69) One of the properties of direct current is
- a) constant value and direction.** b) constant value but variable direction
c) variable value but constant direction d) (a) and (b)
- 70) The is the only way for hormones to reach the target cells.
- a) saliva **b) blood** c) water d) ducts
- 71) Generating an alternating electric current is by using the
- a) rheostat. **b) dynamo.** c) dry cell. d) voltmeter
- 72) The hormone responsible for appearance of female secondary sex characteristics is ...
- a) thyroxin. b) adrenalin. **c) estrogen.** d) testosterone
- 73) All the following metals replace hydrogen of acid except
- a) zinc. b) potassium **c) silver.** d) magnesium
- 74) If an electric current of 0.2 amperes flows through an electric heater and potential difference between its two ends is 220 volt, its resistance equals to Ohms.
- a) 1100** b) 11 c) 110 d) 11000
- 75) From compounds which are decomposed by heat into metal and oxygen is
- a) $\text{Cu}(\text{OH})_2$ b) CaSO_4 c) CuCO_3 **d) HgO**

76) According to Mendel's second law, each pair of the alternative traits is inherited independently of the others and appears in the second generation at a ratio of

- a) 1 : 1 b) 2: 1 **c) 3 : 1** d) 4: 1

77) Carbon dioxide evolves during thermal decomposition of compound.

- a) HgO b) CuSO₄ **c) CuCO₃** d) Cu(OH)₂

78) The ratio between the potential difference across two ends of a conductor and the electric current intensity passing through it is equal to

- a) e.m.f. b) electric current.
c) quantity of electricity. **d) electric resistance.**

79) Double substitution reactions between salt solutions are accompanied by formation of

- a) metal. **b) a precipitate.** c) an oxide. d) a non-metal.

80) The nuclear energy is peacefully used in the industrial field to convert sand to..... for manufacturing computer processors.

- a) electric energy **b) silicon sheets**
c) nuclear fuel d) atomic bombs

81) The scientists discovered the means of how the gene controls the appearance of the hereditary trait.

- a) Mendel and Newton b) Watson and Crick
c) Johansen & Mendel **d) Badel and Tatum**

82) All of the following are radioactive elements except.....

- a) radium. b) uranium. **c) iron.** d) cesium.

83) On adding silver nitrate solution to sodium chloride solution, is formed.

- a) a white precipitate of sodium nitrate
b) a white precipitate of silver chloride
c) a blue precipitate of silver chloride
d) no precipitate

84) The reaction :



, represents process.

- a) oxidation **b) reduction** c) association d) substituting

85) The measuring unit of the quantity of electricity is

- a) ampere. **b) coulomb.** c) volt. d) joule.

86) If matting occurs between two individuals, both of them are hybrid and 200 members resulted from this matting, then the hybrid members produced may be individual.

- a) 50 **b) 100** c) 150 d) 200

Complete:

- 1) Most metal carbonate decompose thermally intoand
- 2)reaction depends on the activity of metal which determine by
- 3) Speed of chemical reaction affecting by,, and.....
- 4) Man can never breath, move or digest food without.....
- 5)device used to measure resistance whileused to measure current intensity.
- 6)is a dominant trait in human.
- 7)device used to control the resistance while used to measure electro motive force.
- 8)hormone regulates the growth of muscles.
- 9)andused to decompose hydrogen peroxide intoand.....
- 10) Safe dose of nuclear radiation for public iswhile for radiologist isper
- 11) The second law of Mendel is called.....
- 12)effects are change in the cell composition.
- 13) Mendel choosesplant to make its experiments of hereditary.
- 14)current has constant direction and intensity.
- 15) Isotopes of element have the same number ofand differ in number of
- 16)current has variable direction and intensity.
- 17) The first law of Mendel is called law of

- 18) Active metal can replace.....of acid giving salt of acid and
- 19) Speed of chemical reaction increase by increasing or.....orand increase by using.....
- 20) When potential difference increase to double, current intensity
- 21)hormone secreted byto increase the level of glucose in the blood.
- 22)andare dominant traits in human.
- 23)effects are change appear on living organism as a result of radiation.
- 24) Metal hydroxide decompose by heat intoand
- 25) Rheostat used to controlandby changing
- 26),.....andare radioactive elements.
- 27) The individual who carry a similar pair of genes called.....
- 28)hormone secreted by..... gland to secret milk during breast feeding.
- 29) Although aluminium comeszinc in C.A.S, reaction of zincthan aluminium with diluted acids.
- 30) Electric intensity isproportional toaccording to ohm's law.
- 31) In series connection, as number of cells increases, e.m.f
- 32) gland consists of two lobes, located in the front surface of neck.
- 33) The green pod of pea is..... trait, while green seed of pea is.....trait.
- 34)scientist is the founder of hereditary.

- 35)reaction is the reaction between acid and alkali formingand.....
- 36)hormone secreted bygland responsible for food assimilation process.
- 37) decompose thermally into metal nitrite and
- 38)and.....are natural sources of radiation pollution.
- 39)and.....able to make model of DNA.
- 40) Catalytic converter composed ofcovered with thin layer ofmetals.
- 41) Endocrine glands secrete more thanin the human body.
- 42) Concentration of substances measured byunit.
- 43) Hydrogen peroxide can decompose using.....as catalyst or byenzyme.
- 44)is the international measuring unit of radiation absorbed by human body.
- 45) Oxidation and reduction areprocesses.
- 46)enter in the structure of thyroxin hormone.
- 47)device used to measure resistance.
- 48) Genes consist of smaller units called
- 49) E.m.f of battery is measured byas it connected inbetween
- 50) When hormone increase or decrease it causes
- 51)trait cant transmitted from one generation to another.
- 52)and.....discover how the gen control the traits.
- 53)is an safety mean in car filed withon accident decompose giving nitrogen gas.

- 54) hormone in male is similar tohormone in female are responsible for appearance secondary sex characters.
- 55) Safe dose of nuclear radiation depends on,..... and.....
- 56) Sodium.....electron so it is a /an.....agent.
- 57)andmake the model of DNA.
- 58)used in modern cars to treat
- 59) Active metals react with acids formingand
- 60) In the beginning of chemical reaction the concentration of product
- 61) Calcitonin hormone secreted bygland, it control the level of
- 62)effects are change in sex chromosome composition.
- 63)discover radioactivity by discovering the emission ofrays fromelement.
- 64)individual that carry a different pairs of genes.
- 65)and..... are isotopes found in polluted food after Chernobyl, they produced from decay.....
- 66) gland consists of two lobes, located below the brain.

Compare between the following:

1. Hereditary trait and acquired trait.
2. Natural and artificial radioactivity.
3. Oxidizing and reducing agent.
4. Dominant trait and recessive trait.
5. Connection of cell in series and in parallel (acc. to produced e.m.f., diagrammatic figure, effect of increasing number of used cells and used rule)

6. Natural and artificial sources of radiation pollution.
7. Types of catalysts.
8. Current intensity, potential difference and electric resistance
(acc. to definition, apparatus for measuring and measuring unit)
9. Simple goitre and exophthalmic goitre (acc.to reason ,symptoms)
10. Oxidation and reduction process.
11. Nuclear reactor and nuclear bomb.
12. Pure individual and hybrid individual.
13. Heating of metal oxide and metal hydroxide.
14. Fixed resistance and variable resistance.
15. Ovaries and testes (acc.to produced hormone ,function)
16. Reaction of diluted acid with iron piece and iron filling (acc. to speed of chemical reaction)
17. Voltmeter and ammeter (acc.to uses, measuring units and way of connection in the electric circuit)
18. Physical, genetic and cellular effect due to exposure to radiation.
19. Ohmmeter and rheostat (acc. to uses)
20. Black eyes and narrow eyes (acc. to type of trait)
21. Covalent compound and ionic compound (acc. to speed of chemical reaction)
22. Electrochemical cell and electric generator
23. Dwarfism and gigantism (acc.to reason)
24. The direct and alternating current (acc.to source, direction, intensity, transferring, ability to be changed, uses and graph)
25. Insulin and glucagon (acc. to function)

What happen when?

1. Decrease secretion of insulin hormone.
2. Mating between a pure pea plant having tall stem and red flowers and another having short stem and white flowers (according to the appearance of traits in the second generation).
3. Heating of copper carbonate.
4. Mating between two individuals, each of them has a pure trait of the ability to roll the tongue.
5. Secretion of growth hormone increase at childhood.
6. Decrease the secretion of thyroxine hormone.
7. To electric resistance if electric intensity increase to double.
8. Increase the secretion of thyroxine hormone.
9. Heating of copper oxide.
10. Putting two effervescent tablets in two beakers, one of them contains cold water and the other contains hot water.
11. A man is exposed to fear and horror.
12. To potential difference if work increase to double and quantity decrease to its half value.
13. The level of glucose increase more than normal in the blood.
14. Replacing dilute hydrochloric acid by concentrated hydrochloric acid when reacting with magnesium.
15. Mating between two individuals different in two pairs or more of contrasting traits.
16. Increasing the temperature of the chemical reaction.
17. You keep food outside the refrigerator for a long time.
18. Adding a negative catalyst to a rapid reaction.
19. Heating of red mercury oxide.

20. A pea plant of short stem is pollinated by another of hybrid tall stem.
21. Adding few manganese dioxide (MnO_2) powder to hydrogen peroxide • Putting a piece of sweet potato in a flask containing hydrogen peroxide.
22. A pea plant of short stem is pollinated by another hybrid tall stem.
23. Pollination of peas flowers with hybrid yellow seeds with each other.
24. Connecting voltmeter to the 2 poles of battery when electric circuit is opened.
25. adding sodium hydroxide solution to blue copper sulphate solution
26. Increasing the surface area exposed to reaction "related to the number of reacting molecules and the rate of the reaction".
27. The level of glucose decrease more than normal in the blood.
28. Heating the solution resulting from the reaction between hydrochloric acid and sodium hydroxide.
29. Adding silver nitrate solution to sodium chloride solution.
30. A man takes a little amount of iodine in his food.
31. The stigmas of the flower of pea plant uncovered during the study of the inherited traits.
32. Mendel didn't remove the stamens of the flowers of the pea plant that produces yellow seeds.
33. Replacing a piece of iron with iron filings has the same mass on reacting with an equal amount of diluted acids.
34. The gene cannot produce its specific enzyme.

35. Mating between two individuals, where one of them carries pure dominant trait, but the other carries pure recessive trait.
36. An atom of an element gains an electron or more during the chemical reaction (according to oxidation and reduction processes).
37. Adding diluted HCl to a piece of zinc.
38. Putting two effervescent tablets in two beakers, one of them contains cold water and the other contains hot water.
39. Increase or decrease in the secretion of one hormone.
40. Secretion of growth hormone decrease at childhood.
41. Heating of blue copper sulphate.
42. A dominant gene exists with a recessive one.
43. The length of the rheostat wire increase in the electric circuit (acc.to electric current intensity)
44. Cross-pollination takes place between two pure pea plants, one with a yellow pod and the other with a green pod.
45. Putting a piece of sodium in water.
46. Two conductors having the same electric potential are connecting together.
47. Adding diluted HCl to sodium carbonate salt.
48. Replacing dilute hydrochloric acid by concentrated hydrochloric acid when reacting with magnesium.
49. Adding HCl to sodium hydroxide.
50. Gene fails to produce its enzyme.
51. Placing a piece of magnesium ribbon in a solution of blue copper sulphate.
52. Passing hydrogen gas over hot copper oxide.

53. Dependence on rice as a main food.
54. Sodium atom loses an electron during the chemical reaction (according to oxidation and reduction processes).
55. A group of similar electric cell were connected in series change its connection to parallel.

Mention the role of scientists:

- a. Watson and Crick.
- b. Johansen.
- c. Henri Becquerel.
- d. Ohm.
- e. Gregor Mendel.
- f. Badel and Tatum.

Mention the physical quantity which is measured by the following units:

1. Ampere.
2. Volt / ampere.
3. Ohm.
4. Volt.
5. Sievert.
6. Volt x second/coulomb.
7. Joule.
8. Mole/ litre.
9. Joule /coulomb.
10. Volt x ampere x second.

Draw the electric circuit achieves ohms law, and state the law and its mathematical relation.

Problems:

1. Calculate the work done to pass electric charge equals 300 coulomb across a conductor its resistance is 5 ohm and current intensity 3 ampere passes through it.
2. Calculate the potential difference across two points when the work of 12 joule is done to transfer an electric charge of 3 coulomb between them.
3. You have 4 similar electric cells, the electromotive force of each one is 15 volt, Illustrate by drawing how you connect them to get batteries of e.m.f. of (a) 6 volt (b) 4.5 volt. (c) 3 volt in two ways. (d) 1.5 volt.
4. Explain on genetic principles the genetic composition of the individuals resulting from crossing pea plant with short stem and hybrid red flowers with another one hybrid tall stem and white flowers: - The tall stem is symbolized by (T).
The red colour is symbolized by (R).
5. If the work done needed to transfer a quantity of electricity of 100 coulomb in a conductor equals 1000 joule during 20 seconds. Find the resistance of the conductor.
6. Calculate the potential difference between the two ends of a vacuum cleaner whose resistance is 22 ohm and the quantity of electricity of 30 coulomb passes for one minute.

7. Both Mohamed "blue eyes" and his wife Wafaa "blue eyes" fight with Samir "blue eyes" and his wife Soaad "brown eyes", on a child's attributions whose eyes is "brown". The judge issued his just judgment to any parents? And write the reason.
8. A battery consists of three electric cells , the e.m.f. of each cell is 3 volt. Calculate the em.f. When the cells are connected:
- (a) In series. (b) In parallel.
9. If an electric current of 0.2 ampere passes in an electric heater and the potential difference between its two ends is 220 volt, calculate the heater's resistance.
10. Use the symbols to express the mating between two pea plants, one of them is hybrid red flowers and the other is white flowers. (knowing that the symbol of the dominant gene is (R) and that of the recessive gene is (r).
11. What is the quantity of electricity which passes through a conductor its resistance 1000 ohm for 30 minutes when the potential difference across its ends is 220 volt ?
12. Use the following symbols to show the results of the mixed-pollination between two pea plants where one carries two pure dominant traits, tall stem and red flowers (TTRR) and the other carries two recessive traits, short stem and white flowers (ttrr) (the first generation only)
13. If the potential difference between the two terminals of a conductor is 60 volt, and the electric current intensity passes through it is 5 ampere. Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source 12 volt.

14. Explain on genetic bases: The genetic composition of the parents and offspring that produced from crossing a pea plant of pure dominant yellow seeds with another with recessive green seeds. (Y dominant - y recessive).
15. If the work done to transfer a charge of 300 coulomb between two points in a time equals 5 minutes is equal to 60 joule.
16. Calculate: (a) The electric current intensity.
a. (b) The potential difference between the two points
17. Explain on genetic bases: The properties of the produced generation from gene is symbolized by (Y) & the recessive one is symbolized by (y). Mention the ratio of the produced individuals.
18. If you have three similar cells, the electromotive force of each is 1.5 volt. Explain by using a diagram, how you can connect them to obtain an e.m.f. of:
(a) 1.5 volt. (b) 3 volt. (c) 4.5 volt.
19. Explain on genetics principles: When pollinating flowers of a pea plant with each other all the produced plants are of red hybrid flowers.
20. If the work done to transfer a quantity of charge through a conductor equals 150 joule and potential difference across its terminals is 3 volt. Calculate the electric current intensity which passes in time equals 10 second in this conductor.
21. If crossing takes place between two pea plants, one of them with yellow seeds and the other with green seeds, this crossing produced 50 % yellow seeds and 50% green seeds.

22. Explain on genetic principles: The genetic structure of parents, The gametes forming first generation, The genetic structure of the produced generation.

23. Use symbols to express the results from the pollination between:
(a) White flowers pea plant with another pure red flowers pea plant. (b) Long stem, green pods pea plant with another short stem, yellow pods. (Showing parents, gametes, first generation and second generation in each crossing.

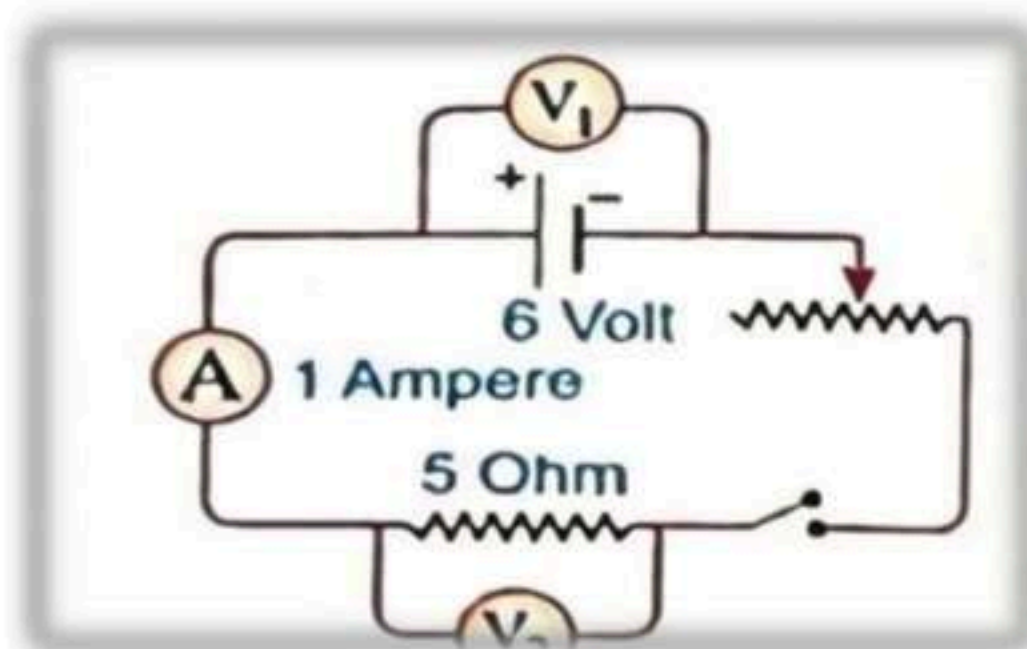
24. You have three electric cells, the e.m.f. of each of them is 6 volt are connected in a circuit and the total resistance is 4 ohm show by drawing how the circuit is connected to obtain current of 1.5 ampere.

25. A man married a woman, each of them carries free ear lobe trait (impure). What's the probability of the offspring that carry the recessive trait? Explain this on genetic principles.

26. Explain on genetic bases: the traits of the individuals resulted from mating between man with curly hair (Hh) with a woman has smooth hair, show the genetic structure and the characteristics for each.

27. In the opposite electric circuit. if the key opened determine:

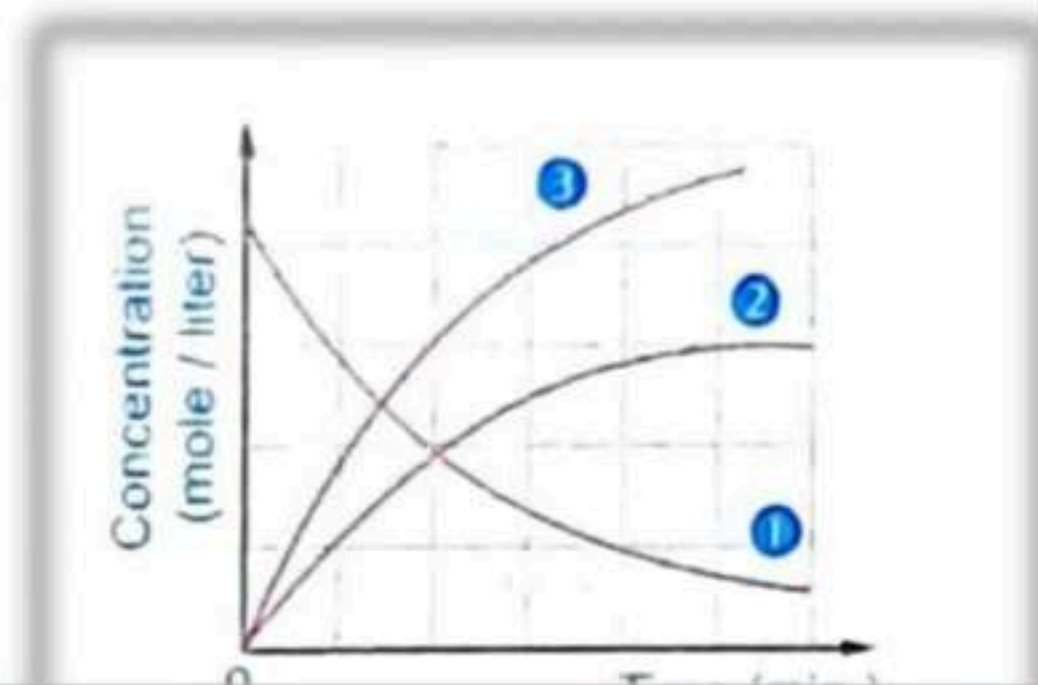
- voltmeter 1
- Voltmeter 2



28. The following equation explains the decomposition of



The opposite graph illustrates the change



in concentration reactants and resultants in respect to time. Write the name of the compound or the element which each number indicates.

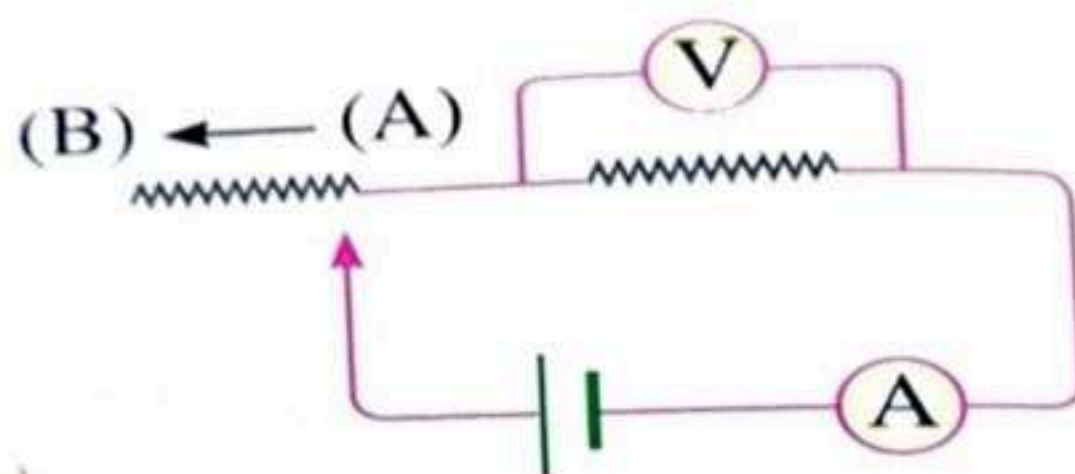
29. In the opposite figure:

When the slider move from A to B

What happen to:

a) Voltmeter and ammeter reading?

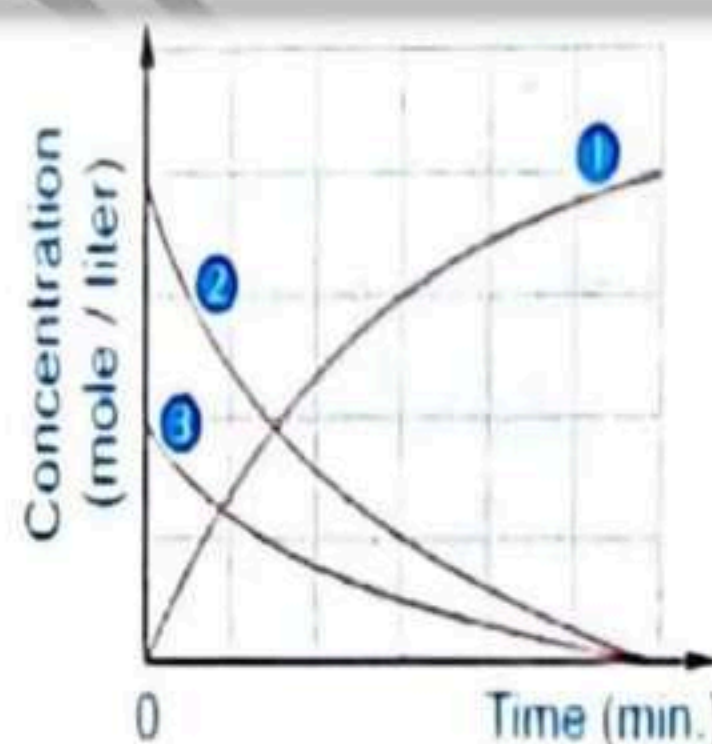
b) The value of resistance R?



30. The following equation represents the combination between two elements to form a compound:



The opposite graph represents the concentration of the reactants and resultants.



Answer the following:

- Write the name of the compound or the element which each number indicates.

- What happens to AB_2 during reaction?

- Mention in which time the concentration of:

a) AB_2 is 100%

b) B is 100%

c) A is 0%

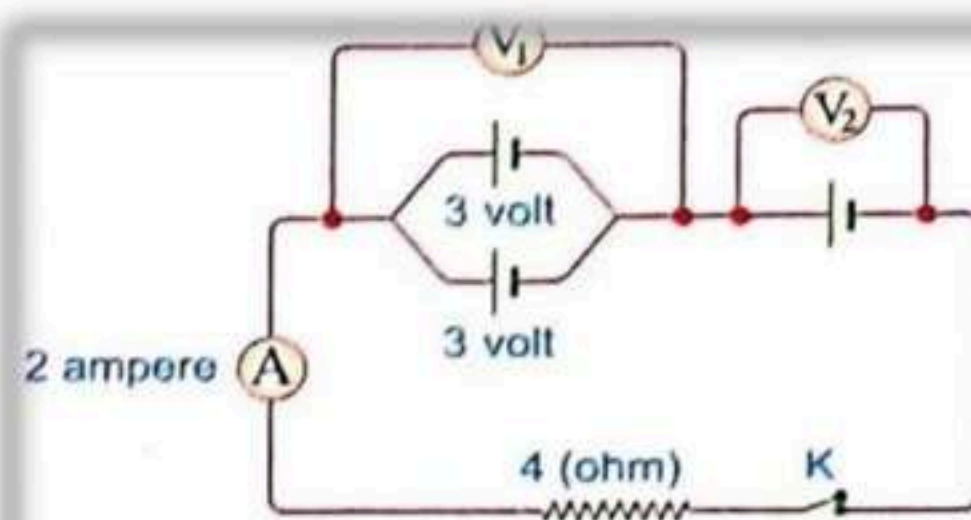
d) AB_2 is 0 %

31. In the opposite electric circuit, if the key is opened.

Determine:

a) e.m.f. in voltmeter (V_1).

b) e.m.f. in voltmeter (V_2).



Give reasons for:

- 1) Pituitary gland is called by the master gland.
- 2) The occurrence of effervescence on putting a piece of aluminium in diluted hydrochloric acid.
- 3) A white precipitate is formed on adding silver nitrate solution to sodium chloride
- 4) The height of some persons may exceed 2 meters.
- 5) The food must be contained iodine.
- 6) Thyroid gland plays a role in control calcium in the blood.
- 7) Man suffers from simple goitre.
- 8) Although aluminium comes before zinc in C.A.S. aluminium delays after zinc in reaction in with diluted hydrochloric acids.
- 9) Occurrence of reaction between magnesium and copper sulphate.
- 10) Pancreas is a mixed gland.
- 11) The disappearance of the green colour two pea plants, one pure green seeds and the other with pure yellow seeds.
- 12) The ability to rolling the tongue is a dominant trait.
- 13) The areas chosen for storing radioactive waste should be steady.
- 14) Alternating current is preferred than direct current.
- 15) Blood is the only way for hormones to reach target cell.
- 16) The endocrine glands are called by this name.
- 17) Pancreas is a double function gland.
- 18) The voltmeter is connected to the poles of battery.
- 19) Rheostat used in some electric circuit.
- 20) Charging mobile phones have electric transformer.
- 21) The speed of chemical reaction increase as concentration of reactant increase.

- 22) The fridge is used to preserve food.
- 23) Reactions between ionic compounds are faster than covalent compounds.
- 24) Copper doesn't react with diluted acids.
- 25) Mendel removed the stamens from the flowers of the plants before the anther become mature.
- 26) Mendel covered the stigmas of pea flowers during studying the hereditary traits.
- 27) Magnesium replaces the hydrogen of acids.
- 28) The blue colour of copper sulphate disappears on putting a piece of magnesium in it.
- 29) Not keeping silver nitrate solution in aluminium containers.
- 30) The skill of playing basketball isn't a hereditary trait.
- 31) Mendel selected (chose) the pea plant to conduct his experiment
- 32) In the reaction $H + Cu_2O \longrightarrow H_2O + Cu$
Hydrogen is considered as a reducing agent, while copper oxide is considered as an oxidizing agent.
- 33) Learn to walk in children is not considered a genetic trait.
- 34) Mendel let the pea plants self-pollinate for several generations.
- 35) In the reaction: $2Na + Cl \longrightarrow 2NaCl$
Sodium is considered as a reducing agent.
- 36) Most metals are strong reducing agents, while most non-metals are strong oxidizing agents.
- 37) Oxidation and reduction are concurrent processes that happen at the same time.

Define:

1. Hormone disorder.
2. Target cell.
3. Reduction process.
4. Ohms law.
5. Mendel second law.
6. Chemical reaction.
7. Hormones.
8. Reducing agent.
9. Catalyst.
10. Mendel first law.
11. C.A.S.
12. Electric resistance.
13. Principle of complete dominance.
14. Oxidizing agent.
15. Current intensity.
16. Radioactivity phenomenon.
17. Enzymes.
18. Ohm.
19. Neutralization reaction.
20. Sliding rheostat.
21. Oxidation process.
22. Volt.
23. Speed of chemical reaction.
24. Electric potential.
25. E.m.f.

Show by balanced equation.

1. Adding calcium hydroxide solution to diluted hydrochloric acid.
2. The reaction of sodium carbonate with diluted hydrochloric acid.
3. Adding silver nitrate solution to sodium chloride solution.
4. Reduction of hot copper oxide by passing hydrogen gas.
5. Oxidation and reduction reaction.
6. Reaction of decomposition of nitrogen pentoxide.
7. Reaction of sodium hydroxide with copper sulphate solution.
8. Reaction of iron with dil. hydrochloric acid.
9. Reaction of magnesium with hydrochloric acid.
10. The effect of heat on red mercuric oxide.
11. The effect of heat on sodium nitrate.
12. The effect of heat on copper hydroxide
13. The effect of heat on copper carbonate.
14. The effect of heat on copper sulphate.
15. The reaction of water with sodium
16. The reaction of zinc with diluted hydrochloric acid.
17. Adding of aluminium turnings to diluted hydrochloric
18. Placing of a piece of magnesium in a solution of copper sulphate.
19. The substitution of a metal instead of another one in one of its salt solution
20. The reaction of dil. hydrochloric acid with sodium hydroxide (what is the name of the reaction).

Mention the importance of:

- 1) Voltmeter.
- 2) Insulin hormone.
- 3) Thyroxine hormone.
- 4) Rheostat.
- 5) Ammeter.
- 6) Pituitary gland.
- 7) Ohmmeter.
- 8) Glucagon hormone.
- 9) Testosterone
- 10) Estragon
- 11) Adrenal gland
- 12) Adrenaline hormone.
- 13) Enzyme
- 14) sexual glands activating hormone
- 15) Manganese dioxide.
- 16) Catalytic converter.
- 17) Oxidase enzyme.
- 18) Pancreas.
- 19) Transformer.
- 20) Direct current.
- 21) Growth hormone.
- 22) Alternating current.
- 23) TSH
- 24) Dry cell.
- 25) Progesterone hormone.
- 26) Dynamo.

27) Genetically modified rice.

28) Air bag.

29) Nuclear energy in:

a) Space exploration.

b) Drilling field.

c) Agriculture field.

d) Medical field.

e) Industry.

f) In generate electricity.

30) Genes.

31) Human genome project.

32) Iodine salt.

33) Mammary glands activating hormone.

34) Catalyst.

Last Look

Second term

By: Mr. Mohamed Taha

1) Choose the correct answer:-

1-Direct current can be produced from:

(Electrochemical cells – electric generators – electric power stations)

2-..... is the measuring unit of the electric charges (coulomb – ampere – volt)

3- The hormone releases the needed energy from the food stuffs:

(Growth – estrogen – thyroxin)

4- The is used to measure the electromotive force of a battery.

(Voltmeter – Ammeter – Rheostat)

5- The sliding Rheostat is used to change and in the electric circuit.

(The current intensity and potential difference – the resistance and potential difference – current intensity and resistance).

6- The Ammeter is used to measure in the electric circuit.

(The potential difference – the current intensity – the resistance)

7- The unit of measuring the electric resistance is (Ampere – Volt – Ohm)

8- The unit of measuring the current intensity is (Ampere – Volt – Ohm)

9- The direct current is used in (Lighting – electric paint – operating refrigerators)

10- The compound is used in the dry electrode.

(Sodium chloride – ammonium chloride – magnesium chloride)

11-One of the properties of the alternating current is

(Has constant value – change direction – used in electric paint)

12- The radioactive phenomenon was discovered by the scientist.....

(Ohm – Becquerel – Ampere)

13- The effects of radiation is a result of changing the sex chromosomes of the cells. (Physical – genetic– cellular)

14- Human beings should not be exposed to radiation in amounts more than rem.

(5 - 8 - 10)

15- is a nonradioactive element (radium – uranium – iron)

16-.The measuring unit of absorption radiation is (Curie – rem – roentgen)

- 17- The hormone releases the needed energy from the food stuffs (growth – estrogen – thyroxin)
- 18- The hormone responsible for producing secondary sexual male characteristics is the hormone. (Progesterone – testosterone – adrenalin)
- 19- On heating copper hydroxide we obtain : (Copper carbonate and water – copper oxide and water – copper and hydrogen – copper oxide and hydrogen)
- 20- In thermal decomposition reactions, the compound is decomposed into: (Its simple components – its primary elements – other compounds – all the previous)
- 21- The hormone which stimulates the storage of glucose sugar in liver is the: (Insulin – estrogen – thyroxin – parathormone)
- 22- The two factors of the hereditary trait are similar in the individual: (Pure – hybrid – recessive – Pure and recessive)

2) Mendel placed a group of assumptions to explain the appearance of the dominant trait and the disappearance of the recessive trait in the first generation in the experiments that he carried with the pea plant. Explain these assumptions.

3) Writ the scientific term :

- 1- The flow of electric charges in a conductor.
- 2- The electric current of fixed intensity and direction.
- 3- Parts of the DNA that are present on the chromosomes and carry the hereditary traits of the individual.
- 4- Change in the nature of the hereditary factors that control the traits of the living organism, which results in a change in the traits of this living organism.
- 5- Mechanism with which hormone works inside the human body.
- 6- The breaking up of the molecules of the reactants and the forming of new coherences.
- 7- A chemical process where the atom gains one or more electron.
- 8- It is the substance which loses an electron or more during a chemical reaction.
- 9- A reaction where an element substitutes another one.
- 10- A solution that accepts the dissolution of an additional amount of the solute in it with the increase in temperature.
- 11- A solution whose components can be separated by refining or filtration.
- 12- A solution in which the solute molecules are distributed in the solvent irregularly.
- 13- A mixture that is homogenous in composition and properties and consists of two or more substances that are not chemically united.
- 14- A solution in which an additional amount of the solute can be added at a certain temperature
- 15- The obstruction the electric current during its flow in the conductor.
- 16- The flow of electric negative charges in a conducting element (metal wire).
- 17- The amount of electric charges that flow through a conductor in a certain time.
- 18- The process of spontaneous conversion of atoms of some elements present in nature to reach a more stability.

- 19- The radiation and nuclear energy emitted during nuclear reactions that can be controlled and carried out at nuclear reactors.
- 20- The atoms of radioactive elements that contain the same number of protons and have different number of neutrons.
- 21- The changes that take place to the living organism due to its exposure to radiations.
- 22- The measuring unit of absorbed radiation.
- 23- The flow of electric charges in a conductor.
- 24- The electric current of fixed intensity and direction.
- 25- The resistance of a conductor that allows the passing of an electric current of 1 Ampere through it when the potential difference between its two ends is 1 Volt.
- 26- The intensity of the electric current flowing in an electric circuit when an electric charge of 1 Coulomb passes within the conductor's cross section in 1 second.
- 27- The device used to measure the intensity of the electric current passing in a conductor.
- 28- The electric state of a conductor that shows the transference of electricity from and to it.
- 29- The measurement unit of the electromotive force of the electric cell.
- 30- The measuring unit of the absorbed radiation.
- 31- The natural conversion of the atoms of some elements in nature as an attempt to reach a more stable composition.
- 32- A science that researches the transmission of the hereditary traits from one generation to another by the studying the similarity and difference between the parents and the offspring.
- 33- The characters ready to be transmitted from one generation to another.
- 34- The trait that appears in all individuals of the first generation in Mendel's experiments.
- 35- The appearance of a hereditary trait in the individuals of the first generation when two individuals copulate and one of them is carrying a pure hereditary trait contrasting the trait carried by the other individual.
- 36- It is chemically consisted of a nucleic acid called DNA connected with protein.
- 37- They are parts of DNA on the chromosomes and control the hereditary traits of the individual.
- 38- A disease caused by the increase of thyroxin hormone after the adulthood.
- 39- The traits that are not transmitted from one generation to another.
- 40- A gland that secretes a hormone that regulates the growth of the human sexual organs.
- 41- A chemical message that controls and regulates the activities and functions of most of the body organs.
- 42- Organs secreting hormones in the human body.
- 43- Mechanism with which hormones work to achieve the homeostasis balance in the human body.
- 44- The result when one of the endocrine glands does not work properly.

4) Write the balanced chemical equations for the following:

- 1- The reaction between hydrochloric acid and sodium hydroxide.
- 2- Adding silver nitrate solution to sodium chloride solution.
- 3- The effect of heat on red mercury oxide.
- 4- The reaction of zinc with diluted hydrochloric acid.
- 5- The effect of heat on sodium nitrates.

5- If the potential difference between the terminals of a conductor is 6 volts, and the electric current of intensity 0.5 ampere is passed through it. Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of 12 volts.

6- Calculate the quantity of electricity that pass through a conductor of resistance 1000 ohms for 30 minutes, given the potential difference between its two terminals is 220 volts.

7- Calculate the potential difference between two points if the work done to transfer a charge of 600 coulomb is 6600 joule.

9) Complete the following statements:

1- Oxidization is a chemical process where the atom an electron or more.

2- factor is the substance which gains one electron or more during a chemical reaction.

3- During reactions, the compound breaks up by heat into its simple components.

4-is the reaction between an acid and an alkali to form salt and water.

5- is the substance which gives oxygen and takes away hydrogen.

6- At the beginning of the reaction, the concentration of reactants is..... %

7- The change in the concentration of reactants and resultants in a time unit is.....

8- The increase in concentration of reactants makes the chemical reaction

9- The reaction of contributing compounds is

10- Sodium chloride powder reacts than a cube of sodium chloride.

11- A substance which increases the chemical reaction without sharing in the reaction is.....

12- $\text{NaCl} + \text{AgNO}_3 \longrightarrow \dots\dots\dots + \dots\dots\dots$

13- $\text{Cu}(\text{OH})_2 \longrightarrow \dots\dots\dots + \dots\dots\dots$

14- $2\text{NaNO}_3 \longrightarrow \dots\dots\dots + \dots\dots\dots$

15- $2\text{HgO} \longrightarrow \dots\dots\dots + \dots\dots\dots$

16- The size of the solute molecules in the real solution is than that in the colloidal solution.

17- In the solution, the solute molecules can be distinguished by the naked eye.

18- It is possible to dissolve more solute in the solution.

19- In the stomach, there is that help in the digestion of proteins

20- Solution can be classified in terms of homogeny into and

21- The break up of existed bonds in the molecules of reactants and the forming of new bonds is called

22- The speed of chemical reactions due to the increase of temperature.

23- Dwarfism is a disease caused by the decrease of the secretion of hormone at the childhood.

- 24- Oxidation and reduction are two processes.
- 25- The components of the solution can be separated by refining or filtration.
- 26- The hormone is secreted when the rate of glucose sugar increases in the blood.
- 27- When the amount of glucose decreases in blood, pancreas secretes hormone
- 28- is measured by using the Voltmeter and has a measuring unit known as
- 29- The is used to measure the electromotive force of a battery in units known as
- 30- While connecting charged conductors, the electric current passes from the conductor have potential to the conductor have potential.
- 31- The electric current generated from a dynamo is due to converting energy to energy.
- 32- Cell produce current while the dynamo produces current.
- 33- There are two types of electric current, and
- 34- Hormones are directly secreted into the blood stream by
- 35- Thyroxin is a that regulates food assimilation in your body
- 36- When the secretion of the growth hormone decreases at the childhood, Man is infected by

10) Put a (✓) or (✗) in front of the following statements and correct the underline words:

- 1- The increase in the concentration of the reactants increases the number of collisions between molecules so that the speed of reaction decreases. ()
- 2- The dissolved particles of the colloidal solution can be seen by the naked eye. ()
- 3- Most metal carbonates decompose by heating into metal oxide and carbon dioxide. ()
- 4- The reactions of ionic compounds are slower than coordinate compounds. ()
- 5- Sulfuric acid is used in making car batteries. ()
- 6- You can convert the direct current to an alternating current. ()
- 7- Feedback is the mechanism with which hormones work in the human body. ()
- 8- The dynamo produces alternating electric current. ()
- 9- The genetic mutation occurs as a result of the change in the sequence of nitrogenous bases of the gene. ()
- 10- Genes are parts of DNA found in the cytoplasm of the cell. ()
- 11- Mutation in the somatic cells is transmitted to offspring. ()
- 12- The glucagon is secreted by pituitary gland. ()
- 13- Thyroid secretes a hormone that organizes the growth and development of sexual organs in the human body. ()

11) Mention three ways of protection from radioactive pollution?

12) Give reasons :

- 1- It is better to use the alternating current rather than the direct current.
- 2- The voltmeter is connected to both poles of the battery in the electric circuit
- 3- The fridge is used to preserve food.
- 4- Using molecule nickel in hydrating oil instead of pieces of nickel.
- 5- Reactions between ionic compounds are fast whereas reactions between contributing compounds are slow.
- 6- Mendel removed the stamens from the flowers of the plants.
- 7- Some mutations don't be transmitted from one generation to another.
- 8- The areas chosen for storing radioactive wastes should be stable.
- 9- Radiation has genetic effects.
- 10- After the Chernobyl accident, radioactive isotopes were found in the food products.
- 11- Magnesium can replace copper in its salt solutions, while opposite cannot happen.
- 12- Some elements are called radioactive elements.
- 13- The height of some persons may reach 3 meters.
- 14- The two adrenal glands have an important role when Man is exposed to emergency.
- 15- Pancreas is a double-function gland.
- 16- Mendel selected the pea plant to conduct his experiments.
- 17- Copper does not react with diluted hydrochloric acid.
- 18- Learn to walk in children is not considered a genetic trait.
- 19- Pituitary is called the "master gland".

13) Write one economical importance for each of the following:

- 1- Sulfuric acid.
- 2- Calcium hydroxide.
- 3- Calcium carbonates.
- 4- Magnesium hydroxide.
- 5- Sodium chloride.
- 6 Hydrochloric acid.
- 7- Enzymes in the human body.

14) Explain the following:

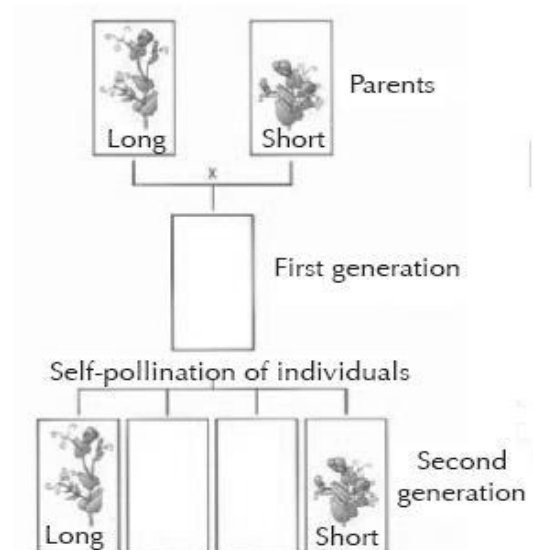
- 1- The occurrence of effervescence on putting a piece of aluminum in diluted hydrochloric acid.
- 2- The rate of the reaction of hydrochloric acid with iron
- 3- Preservation of food in the freezer.
- 4- Mendel's selecting the pea plant to conduct his experiments.
- 5- When a pure yellow pod pea plant is pollinated with a pure green pod pea plant, it produces plants that are all with green pods.
- 6- The ability of bending the tongue is a dominant trait in the human being
- 7- An experiment to explain the law of independent assortment of the hereditary factors.
- 8- The model of Watson and Creek of the DNA structure
- 9- How the genes perform their functions.
- 10- When you pollinate a pure long stem pea plant with a short stem pea plant, it produces plants all are long stems.
- 11- The separate ear lobe is dominant over the adhered ear lobe.

15) The figure in front of you illustrates the mixed pollination between the flowers of the short pea plant and another long, determine:

A- The individuals of the first generation.

B- Complete the missing individuals of the second generation and describe the individuals of the second generation.

C- Use symbols while expressing in the previous experiment.



16) Illustrate by experiment each of the following:

- 1- The importance of a catalyst in a chemical reaction.
- 2- The effect of the surface area on the speed of a chemical reaction.
- 3- The effect of temperature on the speed of a chemical reaction.
- 4- Determination the value of an unknown resistance or verifying of Ohm's law practically.

Wishing you all good luck

Mr. Mohamed

Last Look

Ansewr sheets

By:Mr.Mohamed Taha

1) Choose the correct ansewr:-

1-Direct current can be produced form:

(**Electrochemical cells** – electric generators – electric power stations)

2-..... is the measuring unit of the electric charges (**coulomb** – ampere – volt)

3- The hormone releases the needed energy from the food stuffs:

(Growth – estrogen – **thyroxin**)

4- The is used to measure the electromotive force of a battery.

(**Voltmeter** – Ammeter – Rheostat)

5- The sliding Rheostat is used to change and in the electric circuit.

(**The current intensity and potential difference** – the resistance and potential difference – current intensity and resistance).

6- The Ammeter is used to measure in the electric circuit.

(The potential difference – **the current intensity** – the resistance)

7- The unit of measuring the electric resistance is (Ampere – Volt – **Ohm**)

8- The unit of measuring the current intensity is (**Ampere** – Volt – Ohm)

9- The direct current is used in (Lighting – **electric paint** – operating refrigerators)

10- The compound is used in the dry electrode.

(Sodium chloride – **ammonium chloride** – magnesium chloride)

11-One of the properties of the alternating current is

(Has constant value – **change direction** – used in electric paint)

12- The radioactive phenomenon was discovered by the scientist.....

(Ohm – **Becquerel** – Ampere)

13- The effects of radiation is a result of changing the sex chromosomes of the cells. (Physical – **genetic**– cellular)

14- Human beings should not be exposed to radiation in amounts more than rem.

(**5** - 8 - 10)

15- is a nonradioactive element (radium – uranium – **iron**)

16-.The measuring unit of absorption radiation is (Curie – **rem** – roentgen)

- 17- The hormone releases the needed energy from the food stuffs (growth – estrogen – **thyroxin**)
- 18- The hormone responsible for producing secondary sexual male characteristics is the hormone. (Progesterone – **testosterone** – adrenalin)
- 19- On heating copper hydroxide we obtain : (Copper carbonate and water – **copper oxide and water** – copper and hydrogen – copper oxide and hydrogen)
- 20- In thermal decomposition reactions, the compound is decomposed into: (Its simple components – its primary elements – other compounds – **all the previous**)
- 21- The hormone which stimulates the storage of glucose sugar in liver is the: (**Insulin** – estrogen – thyroxin – parathormone)
- 22- The two factors of the hereditary trait are similar in the individual: (Pure – hybrid – recessive – **Pure and recessive**)

2) Mendel placed a group of assumptions to explain the appearance of the dominant trait and the disappearance of the recessive trait in the first generation in the experiments that he carried with the pea plant. Explain these assumptions.

The assumptions are:

- 1-The hereditary traits depend on the transmitted hereditary factors(genes) from the parents to their offsprings
- 2- Each hereditary factor is controlled by two factors.
- 3- The factors are separated (by meiosis division) in which each parent carries only one factor.
- 4- The two factors are copulated at fertilization to produce either hybrid or pure individual.

3) Writ the scientific term :

- 1- The flow of electric charges in a conductor. **Electric current**
- 2- The electric current of fixed intensity and direction. **Direct current**
- 3- Parts of the DNA that are present on the chromosomes and carry the hereditary traits of the individual. **Genes**
- 4- Change in the nature of the hereditary factors that control the traits of the living organism, which results in a change in the traits of this living organism. **Mutation**
- 5- Mechanism with which hormone works inside the human body. **Feedback mechanism**
- 6- The breaking up of the molecules of the reactants and the forming of new coherences.

Chemical reaction

- 7- A chemical process where the atom gains one or more electron. **Reduction**
- 8- It is the substance which loses an electron or more during a chemical reaction.

Reducing factor

- 9- A reaction where an element substitutes another one. **Simple substitution reaction**
- 10- A solution that accepts the dissolution of an additional amount of the solute in it with the increase in temperature. **Super saturated solution (pre saturated solution)**
- 11- A solution whose components can be separated by refining or filtration. **Suspension**

12- A solution in which the solute molecules are distributed in the solvent irregularly.

Non homogenous solution

13- A mixture that is homogenous in composition and properties and consists of two or more substances that are not chemically united. **Solution**

14- A solution in which an additional amount of the solute can be added at a certain temperature. **Saturated solution**

15- The obstruction the electric current during its flow in the conductor. **Resistance**

16- The flow of electric negative charges in a conducting element. **Electric current**

17- The amount of electric charges that flow through a conductor in a certain time.

Electric current intensity

18- The process of spontaneous conversion of atoms of some elements present in nature to reach a more stability. **Natural radioactivity**

19- The radiation and nuclear energy emitted during nuclear reactions that can be controlled and carried out at nuclear reactors. **Artificial radioactivity**

20- The atoms of radioactive elements that contain the same number of protons and have different number of neutrons. **Isotopes**

21- The changes that take place to the living organism due to its exposure to radiations.

Spontaneous mutation

22- The measuring unit of absorbed radiation. **Rem**

23- The flow of electric charges in a conductor. **Electric current**

24- The electric current of fixed intensity and direction. **Direct current**

25- The resistance of a conductor that allows the passing of an electric current of 1 Ampere through it when the potential difference between its two ends is 1 Volt. **Ohm**

26- The intensity of the electric current flowing in an electric circuit when an electric charge of 1 Coulomb passes within the conductor's cross section in 1 second. **Ampere**

27- The device used to measure the intensity of the electric current passing in a conductor.

Ammeter

28- The electric state of a conductor that shows the transference of electricity from and to it.

Electric potential of a conductor

29- The measurement unit of the electromotive force of the electric cell. Volt

30- The measuring unit of the absorbed radiation. **Rem**

31- The natural conversion of the atoms of some elements in nature as an attempt to reach a more stable composition. **Natural radioactivity**

32- A science that researches the transmission of the hereditary traits from one generation to another by the studying the similarity and difference between the parents and the offspring.

Genetics

33- The characters ready to be transmitted from one generation to another. Hereditary traits

34- The trait that appears in all individuals of the first generation in Mendel's experiments.

Dominant trait

35- The appearance of a hereditary trait in the individuals of the first generation when two individuals copulate and one of them is carrying a pure hereditary trait contrasting the trait carried by the other individual. **The principle of complete dominance**

36- It is chemically consisted of a nucleic acid called DNA connected with protein.

Chromosome

37-They are parts of DNA on the chromosomes and control the hereditary traits of the individual. Genes

38- A disease caused by the increase of thyroxin hormone after the adulthood.

Exophthalmic goiter

39- The traits that are not transmitted from one generation to another. Acquired traits

40- A gland that secretes a hormone that regulates the growth of the human sexual organs.

Pituitary gland

41- A chemical message that controls and regulates the activities and functions of most of the body organs. Hormone

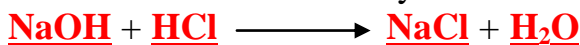
42- Organs secreting hormones in the human body. Endocrine glands

43- Mechanism with which hormones work to achieve the homeostasis balance in the human body. Feedback mechanism

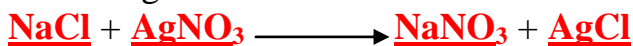
44- The result when one of the endocrine glands does not work properly. Hormone disorder

4) Write the balanced chemical equations for the following:

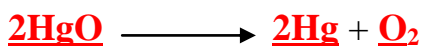
1- The reaction between hydrochloric acid and sodium hydroxide.



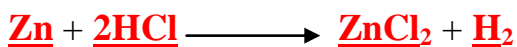
2- Adding silver nitrate solution to sodium chloride solution.



3- The effect of heat on red mercury oxide.



4- The reaction of zinc with diluted hydrochloric acid.



5-The effect of heat on sodium nitrates.



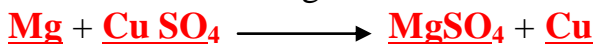
6- The reaction of water with sodium.



7- The reaction between hydrochloric acid and calcium hydroxide.



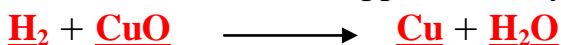
8- Insertion of a magnesium ribbon in a solution of copper sulphate.



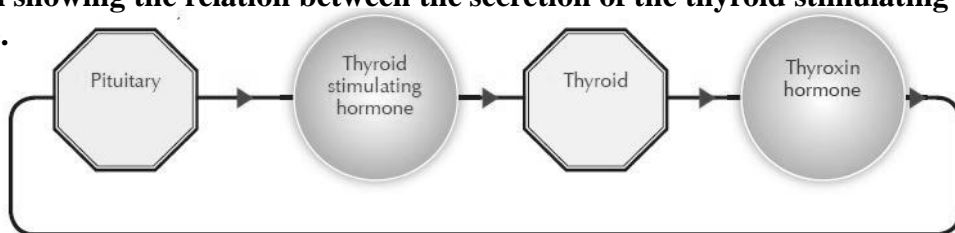
9- The reaction of Aluminium with diluted hydrochloric acid.



10- Reduction of hot copper oxide by hydrogen.



5) Draw a fully labeled diagram showing the relation between the secretion of the thyroid stimulating hormone and thyroxin hormone.



6) Compare between :

1- The spontaneous mutation and the induced mutation.

<u>Spontaneous mutation</u>	<u>Induced mutation</u>
-It is caused by environmental factors like: Exposure for (radiations – chemicals – high or low temperature) -It causes variation among the species of the living organisms.	-It is caused by man -It produces desirable traits like production of seedless, sweeter and larger fruits.

2- Heating of metal oxide and metal hydroxide.

<u>Heating of metal oxide</u>	<u>Heating of metal hydroxide</u>
-It produces metal and oxygen gas releases - Ex: $2\text{HgO} \longrightarrow 2\text{Hg} + \text{O}_2$	-It produces metal oxide and water -Ex: $\text{Cu}(\text{OH})_2 \longrightarrow \text{CuO} + \text{H}_2\text{O}$

3- Saturated and unsaturated solution.

<u>Saturated solution</u>	<u>Unsaturated solution</u>
-It is the solution in which an additional amount of the solute can be dissolved at a certain temperature	-It is the solution in which no additional amount of the solute can be dissolved without a change of the temperature

4- Oxidation and reduction.

<u>Oxidation</u>	<u>reduction</u>
-It is a chemical process in which the percentage of oxygen increases or the percentage of hydrogen decreases. -It is a chemical process in which the atom loses one electron or more.	-It is a chemical process in which the ratio of oxygen decreases or the ratio of hydrogen increases -It is a chemical process in which the atom gains one electron or more.

5- Connection in series and in parallel.

<u>Spontaneous mutation</u>	<u>Induced mutation</u>
-It is caused by environmental factors like: Exposure for (radiations – chemicals – high or low temperature) -It causes variation among the species of the living organisms.	-It is caused by man -It produces desirable traits like production of seedless, sweeter and larger fruits.

6- Colloidal and suspension solutions.

<u>Colloid</u>	<u>Suspension</u>
-It is a homogeneous solution in which its particles can be distinguished only by the microscope. -Ex: milk - blood.	-It is a non homogeneous solution in which its particles can be distinguished by the naked eye. -Ex: Chalk in water – sand in water.

7- Homogenous and non-homogenous solutions.

<u>Homogenous solution</u>	<u>non-homogenous solution</u>
-It is the solution in which its particles cannot be distinguished by the naked eye -Ex: Sugar in water – salt in water.	-It is the solution in which its particles can be distinguished by the naked eye -Ex: Sand in water – oil in water.

8- Simple substitution and double substitution reactions.

<u>Simple substitution</u>	<u>double substitution</u>
-It occurs when an active metal replaces a less active metal in its compound. -Ex: $Mg + CuSO_4 \rightarrow MgSO_4 + Cu$	- It occurs when two compounds in aqueous solution exchange ions & form two new compounds. -Ex: $HCl + NaOH \rightarrow NaCl + H_2O$

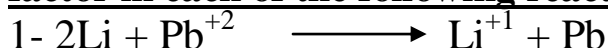
9- The dominant trait and the recessive one with giving examples.

<u>dominant trait</u>	<u>Recessive trait</u>
-It appears in the first generation by a ratio 100% and in the second one by a ratio 75% -It is pure or hybrid	-It does not appear in the first generation and appears in the second one by a ratio 25% -It is always pure.

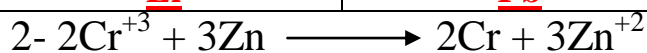
10- The inherited traits and the acquired traits

<u>inherited traits</u>	<u>acquired traits</u>
-They are the traits that are inherited from the parents to their offsprings through genes. -Like: Eye color – skin color – hair color	-They are the traits that are not inherited from the parents, but they are acquired from the surrounding environment -Like: Walking – writing – driving

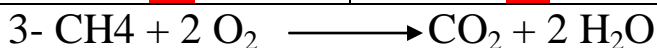
7) Identify the process of oxidization, reduction, oxidizing factor and reducing factor in each of the following reactions:



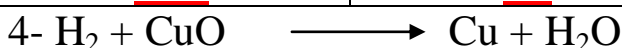
<u>Oxidization</u>	<u>reduction</u>	<u>oxidizing factor</u>	<u>reducing factor</u>
<u>Li</u>	<u>Pb</u>	<u>Pb</u>	<u>Li</u>



<u>Oxidization</u>	<u>reduction</u>	<u>oxidizing factor</u>	<u>reducing factor</u>
<u>Zn</u>	<u>Cr</u>	<u>Cr</u>	<u>Zn</u>



<u>Oxidization</u>	<u>reduction</u>	<u>oxidizing factor</u>	<u>reducing factor</u>
<u>CH4</u>	<u>O2</u>	<u>O2</u>	<u>CH4</u>



<u>Oxidization</u>	<u>reduction</u>	<u>oxidizing factor</u>	<u>reducing factor</u>
<u>H2</u>	<u>CuO</u>	<u>CuO</u>	<u>H2</u>

8) Problems:

1- Calculate the potential difference of the two ends of a vacuum cleaner whose resistance is 22 Ohm and the current intensity passing through it is 10 Ampere.

$$V = R \times I \longrightarrow V = 22 \times 10 = 220 \text{ volt}$$

2- You have three similar cells, the electromotive force of each is 1.5 volt, explain by using a diagram how you can connect them to obtain an e.m.f of:

- 1) 1.5 volts (3 in parallel) 2) 3 volts (two in parallel + one in series)
3) 4.5 volts (3 in series)

3- You have 4 similar electric cells. The potential difference of each one is 1.5 Volt. Illustrate by drawing how you connect them to get batteries of emf of:

- A- 6 Volt. (4 in series) B- 4.5 Volt. (2 in series + 2 in parallel)
C- 3 Volt in two ways. (3 in parallel + one in series) or (2 in parallel + 2 in parallel)
D- 1.5 Volt. (4 in parallel)

4- You have four electric cells each of e.m.f 1.2 volt. Show by drawing the method of connecting them to obtain each of the following:

- A) 1.2 volt (4 in parallel) B) 4.8 volt (4 in series)
c) 2.4 volt (2 in parallel + 2 in parallel)

5- If the potential difference between the terminals of a conductor is 6 volts, and the electric current of intensity 0.5 ampere is passed through it. Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of 12 volts.

$$R = V/I \quad - \quad R = 6/0.5 = 12 \text{ ohm}$$

$$I = V/R \quad - \quad I = 12/12 = 1 \text{ Volt}$$

6- Calculate the quantity of electricity that pass through a conductor of resistance 1000 ohms for 30 minutes, given the potential difference between its two terminals is 220 volts.

$$I = V/R \quad - \quad I = 220/1000 = 0.22 \text{ Ampere}$$

$$I = Q/t \quad - \quad q = I \times t = 0.22 \times (30 \times 60) = 0.22 \times 1800 = 396 \text{ Coulomb}$$

7- Calculate the potential difference between two points if the work done to transfer a charge of 600 coulomb is 6600 joule.

$$V = W/q \quad - \quad V = 6600/600 = 11 \text{ volt}$$

9) Complete the following statements:

- 1- Oxidization is a chemical process where the atom loses an electron or more.
2- Oxidizing factor is the substance which gains one electron or more during a chemical reaction.
3- During thermal decomposition reactions, the compound breaks up by heat into its simple components.

- 4- **Neutralization** is the reaction between an acid and an alkali to form salt and water.
- 5- **Oxidizing agent** is the substance which gives oxygen and takes away hydrogen.
- 6- At the beginning of the reaction, the concentration of reactants is **100 %**
- 7- The change in the concentration of reactants and resultants in a time unit is **the speed of chemical reaction**
- 8- The increase in concentration of reactants makes the chemical reaction **faster**
- 9- The reaction of contributing compounds is **slow**
- 10- Sodium chloride powder reacts **faster** than a cube of sodium chloride.
- 11- A substance which increases the chemical reaction without sharing in the reaction is **catalyst**
- 12- $\text{NaCl} + \text{AgNO}_3 \longrightarrow \text{NaNO}_3 + \text{AgCl}$
- 13- $\text{Cu}(\text{OH})_2 \longrightarrow \text{CuO} + \text{H}_2\text{O}$
- 14- $2\text{NaNO}_3 \longrightarrow 2\text{NaNO}_2 + \text{O}_2$
- 15- $2\text{HgO} \longrightarrow 2\text{Hg} + \text{O}_2$
- 16- The size of the solute molecules in the real solution is **smaller** than that in the colloidal solution.
- 17- In the **suspension** solution, the solute molecules can be distinguished by the naked eye.
- 18- It is possible to dissolve more solute in the **pre saturated** solution.
- 19- In the stomach, there is **hydrochloric acid** that helps in the digestion of proteins
- 20- Solution can be classified in terms of homogeneity into **homogeneous** and **non homogeneous**
- 21- The break up of existed bonds in the molecules of reactants and the forming of new bonds is called **chemical reaction**.
- 22- The speed of chemical reactions **increases** due to the increase of temperature.
- 23- Dwarfism is a disease caused by the decrease of the secretion of **growth** hormone at the childhood.
- 24- Oxidation and reduction are two **concurrent** processes.
- 25- The components of the **suspension** solution can be separated by refining or filtration.
- 26- The **insulin** hormone is secreted when the rate of glucose sugar increases in the blood.
- 27- When the amount of glucose decreases in blood, pancreas secretes **glucagon** hormone
- 28- **Potential difference** is measured by using the Voltmeter and has a measuring unit known as **volt**
- 29- The **Voltmeter** is used to measure the electromotive force of a battery in units known as **volt**
- 30- While connecting charged conductors, the electric current passes from the conductor have **higher** potential to the conductor have **lower** potential.
- 31- The electric current generated from a dynamo is due to converting **mechanical** energy to **electric** energy.
- 32- Cell produces **direct** current while the dynamo produces **alternating** current.
- 33- There are two types of electric current, **direct** and **alternating**
- 34- Hormones are directly secreted into the blood stream by **endocrine glands**
- 35- Thyroxin is a **hormone** that regulates food assimilation in your body
- 36- When the secretion of the growth hormone decreases at the childhood, Man is infected by **dwarfism**

10) Put a (✓) or (✗) in front of the following statements and correct the underline words:

- 1- The increase in the concentration of the reactants increases the number of collisions between molecules so that the speed of reaction (increases). (✗)
- 2- The dissolved particles of the colloidal solution can be seen by microscope. (✗)
- 3- Most metal carbonates decompose by heating into metal oxide and carbon dioxide. (✓)
- 4- The reactions of ionic compounds are faster than coordinate compounds. (✗)
- 5- Sulfuric acid is used in making car batteries. (✓)
- 6- You can convert the alternating current to an direct current. (✗)
- 7- Feedback is the mechanism with which hormones work in the human body. (✓)
- 8- The dynamo produces alternating electric current. (✓)
- 9- The genetic mutation occurs as a result of the change in the sequence of nitrogenous bases of the gene. (✓)
- 10- Genes are parts of DNA found in the nucleus of the cell. (✗)
- 11- Mutation in the reproductive cells is transmitted to offspring. (✗)
- 12- The glucagon is secreted by pancreas. (✗)
- 13- pituitary secretes a hormone that organizes the growth and development of sexual organs in the human body. (✗)

11) Mention three ways of protection from radioactive pollution?

- 1- Avoid exposure to radiation since, the maximum dose of radiation is 5 rem daily.**
- 2- Wearing protective gloves, suits & masks by persons who handle radioactive elements in nuclear reactors & hospitals.**
- 3- The nuclear wastes are surrounded by a cement or rocks and placed deeply inside the ground.**

12) Give reasons :

- 1- It is better to use the alternating current rather than the direct current.
Because alternating current can be used for short and long distances and it is suitable for operating the home appliances
- 2- The voltmeter is connected to both poles of the battery in the electric circuit
To measure the electromotive force
- 3- The fridge is used to preserve food.
Because it slows down the speed of chemical reaction in the food by cooling
- 4- Using molecule nickel in hydrating oil instead of pieces of nickel.
Because increasing the surface area of the reactants increases the speed of the reaction
- 5- Reactions between ionic compounds are fast whereas reactions between contributing compounds are slow.
Because ionic compounds break into ions, while covalent compounds do not.

6- Mendel removed the stamens from the flowers of the plants.

To prevent the plant from reproduction by self pollination

7- Some mutations don't be transmitted from one generation to another.

Because they are somatic mutations that occur in the body cells

8-The areas chosen for storing radioactive wastes should be stable.

To prevent the radioactive pollution to another areas

9- Radiation has genetic effects.

Because it causes changes in the sex chromosomes composition

10- After the Chernobyl accident, radioactive isotopes were found in the food products.

Because after moving the polluted atomic cloud, the rain fell caused a transference of the radioactive isotopes to the soil then to the plant and animals

11- Magnesium can replace copper in its salt solutions, while opposite cannot happen.

Because magnesium is more active than copper in the chemical activity series

12- Some elements are called radioactive elements.

Because they radiate unseen radiations spontaneously

13- The height of some persons may reach 3 meters.

Due to the increase of the growth hormone secreted by the pituitary gland during childhood

14- The two adrenal glands have an important role when Man is exposed to emergency.

Because they stimulate the body organs against emergencies

15- Pancreas is a double-function gland.

Because it secretes two hormones which are insulin and glucagon where:

Insulin decreases the level of sugar in blood, while glucagon increases the level of the sugar in blood.

16- Mendel selected the pea plant to conduct his experiments.

Because pea plant:

1- is easy to be planted and it grows fast

2- Has short life cycle and it produces large crops

3- is easily pollinated artificially

4- Has hermaphrodite flowers, so it can be self pollinated

5- Has several pairs of contrasted traits

17- Copper does not react with diluted hydrochloric acid.

Because copper is less active than hydrogen

18- Learn to walk in children is not considered a genetic trait.

Because it is an acquired trait that is not inherited through generations

19- Pituitary is called the "master gland".

Because it secretes hormones which regulate the functions of the endocrine glands

Ansewr by your self the rest of questions

Wishing you all good luck

Mr. Mohamed

1) Choose the correct answer:-

- 1- The compound is used in the dry electrode.
a) Sodium chloride b) ammonium chloride c) magnesium chloride
- 2- On heating copper hydroxide we obtain : (Copper carbonate and water – copper oxide and water – copper and hydrogen – copper oxide and hydrogen)
- 3- In thermal decomposition reactions, the compound is decomposed into:
(Its simple components – its primary elements – other compounds – all the previous)
- 1- When dilute hydrochloric acid is added to calcium carbonate gas is evolved.
a) CO₂ b) H₂ c) O₂ d) CO
- 2- A process that involves the splitting of compounds into simpler compounds by the effect of electricity is called.....
a) simple substitution b) thermal decomposition
c) electrolysis d) direct combination
- 3- The blue colour of copper sulphate disappears and..... is formed by heating.
a) black ppt b) red colour c) yellow ppt d) black colour
- 4- The following elements can replace hydrogen in dilute acids except element.
a) Magnesium b) zinc c) copper d) sodium
- 5- The oxidizing agent is the compound which during the chemical reaction.
a) loses hydrogen b) gains oxygen c) loses oxygen
- 6- The percentage of hydrogen increases during reactions.
a) neutralization b) oxidation c) reduction d) substitution
- 7- In the reaction between sodium and chlorine to form sodium chloride, the oxidizing agent is.....
a) sodium b) chlorine c) sodium chloride d) both sodium and chlorine

2) Write the scientific term :

- 1- The breaking up of the molecules of the reactants and the forming of new molecules.
- 2- A chemical process where the atom gains one or more electrons.
- 3- It is the substance which loses an electron or more during a chemical reaction.
- 4- A reaction where an element substitutes another one.
- 5- A solution that accepts the dissolution of an additional amount of the solute in it with the increase in temperature.
- 6- A solution whose components can be separated by refining or filtration.
- 7- A solution in which the solute molecules are distributed in the solvent irregularly.
- 8- A mixture that is homogeneous in composition and properties and consists of two or more substances that are not chemically united.
- 9- A solution in which an additional amount of the solute can be added at a certain temperature
- 10- A process of splitting compounds into simpler compounds by the effect of heat.
- 11- The arrangement of metallic elements according to decreasing chemical activity.
- 12- A process in which an element displaces another element in one of its salt solutions.
- 13- It is the double exchange between the radicals of two compounds to give two other new compounds.
- 14- A reaction between acid and alkali to give salt and water.

- 15- A chemical substance which helps to increase the speed of the reaction but does not change itself.
- 16- The chemical process which leads to the increase of oxygen or decrease of hydrogen
- 17- Two processes take place at the same time during the chemical reaction
- 18- A substance which gains one or more electrons during a chemical reaction.
- 19- The chemical process in which the atom of the substance gains one electron or more during the chemical reaction.

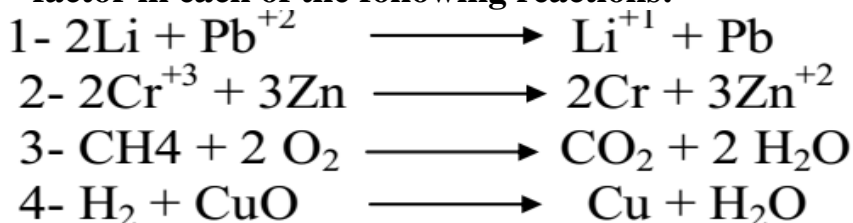
3) Write the balanced chemical equations for the following:

- 1- The reaction between hydrochloric acid and sodium hydroxide.
- 2- Adding silver nitrate solution to sodium chloride solution.
- 3- The effect of heat on red mercury oxide.
- 4- The reaction of zinc with diluted hydrochloric acid.
- 5- The effect of heat on sodium nitrates.
- 6- The reaction of water with sodium.
- 7- The reaction between hydrochloric acid and calcium hydroxide.
- 8- Insertion of a magnesium ribbon in a solution of copper sulphate.
- 9- The reaction of Aluminium with diluted hydrochloric acid.
- 10- Reduction of hot copper oxide by hydrogen.

4) Compare between :

- 1- Heating of metal oxide and metal hydroxide.
- 2- Saturated and unsaturated solution.
- 3- Oxidation and reduction.
- 4- Simple substitution and double substitution reactions.

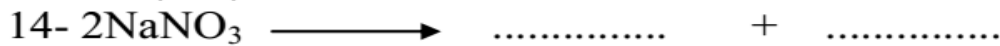
5) Identify the process of oxidization, reduction, oxidizing factor and reducing factor in each of the following reactions:



6) Complete the following statements:

- 1- Oxidization is a chemical process where the atom an electron or more.
- 2-factor is the substance which gains one electron or more during a chemical reaction.
- 3- During reactions, the compound breaks up by heat into its simple components.
- 4-is the reaction between an acid and an alkali to form salt and water.
- 5- is the substance which gives oxygen and takes away hydrogen.
- 6- At the beginning of the reaction, the concentration of reactants is..... %
- 7- The change in the concentration of reactants and resultants in a time unit is.....
- 8- The increase in concentration of reactants makes the chemical reaction.....
- 9- The reaction of contributing compounds is
- 10- Sodium chloride powder reacts than a cube of sodium chloride.

11- A substance which increases the chemical reaction without sharing in the reaction is.....



16- The size of the solute molecules in the real solution isthan that in the colloidal solution.

17- In the solution, the solute molecules can be distinguished by the naked eye.

18- It is possible to dissolve more solute in the.....solution.

19- In the stomach, there is that help in the digestion of proteins

20- Solution can be classified in terms of homogeneity into and

21- The break up of existed bonds in the molecules of reactants and the forming of new bonds is called.....

22- The speed of chemical reactions due to the increase of temperature.

24- Oxidation and reduction are two processes.

25- The components of thesolution can be separated by refining or filtration.

26- The is used to measure the electromotive force of a battery in units known as.....

1- Most metal sulphates undergo thermal decomposition to giveand.....

2- The chemical activity series is the arrangement of metallic elements in a..... order according to their

3 Chemical reaction is the process in which bonds in reactants are and bonds in are formed.

4- Oxidation and reduction are two processes.

5- The substance that gives oxygen and removes hydrogen is called.....

6- In the following reaction: ($2\text{Mg} + \text{CO}_2 \xrightarrow{\Delta} 2\text{MgO} + \text{C}$) the oxidizing agent is while the reducing agent is

7) Put a (✓) or (✗) in front of the following statements and correct the wrong words:

1-The increase in the concentration of the reactants increases the number of collisions between molecules so that the speed of reaction decreases. ()

2- The dissolved particles of the colloidal solution can be seen by the naked eye. ()

3- Most metal carbonates decompose by heating into metal oxide and carbon dioxide. ()

- 4- The reactions of ionic compounds are slower than coordinate compounds. ()
- 5- Sulfuric acid is used in making car batteries. ()
- 6- Metallic elements are arranged in an ascending order according to their chemical activity in the C.A.S. ()
- 7- No reaction takes place between copper and zinc sulphate. ()
- 8- Anhydrous copper sulphate decomposes by heat to give copper oxide and sulphur dioxide. ()
- 9- Reduction means gaining of hydrogen . ()

8) Give reasons :

- 1- The fridge is used to preserve food.
- 2- Using molecule nickel in hydrating oil instead of pieces of nickel.
- 3- Magnesium can replace copper in its salt solutions, while opposite cannot happen.
- 4- Copper does not react with diluted hydrochloric acid.
- 5- When a magnesium strip burns in air a white powder is formed.
- 6- Silver element does not react with dilute sulphuric acid.
- 7- Formation of silvery material on heating red mercuric oxide.
- 8- Oxidation and reduction are two complementary processes in the same chemical reaction.

9) Write one economical importance for each of the following:

- 1- Sulfuric acid. 2- Calcium hydroxide. 3- Calcium carbonates.
- 4- Magnesium hydroxide. 5- Sodium chloride. 6 Hydrochloric acid.
- 7- Enzymes in the human body.

10) Explain the following:

- 1- The rate of the reaction of hydrochloric acid with iron
- 2- Preservation of food in the freezer.

11) Illustrate by experiment each of the following:

- 1- The importance of a catalyst in a chemical reaction.
- 2- The effect of the surface area on the speed of a chemical reaction.
- 3- The effect of temperature on the speed of a chemical reaction.

12) Mention the name of the gas in each of the following:

- 1) Turns lime water milky.
- 2) Is obtained by the reaction between dilute hydrochloric acid and magnesium metal.
- 3) Increase the glowing of lighted splint.
- 4) Is produced from the thermal decomposition of sodium nitrate.

1) Choose the correct answer:-

1-Direct current can be produced form:

(Electrochemical cells – electric generators – electric power stations)

2-..... is the measuring unit of the electric charges (coulomb – ampere – volt)

3- The is used to measure the electromotive force of a battery.

(Voltmeter – Ammeter – Rheostat)

5- The sliding Rheostat is used to change and in the electric circuit.

(The current intensity and potential difference – the resistance and potential difference – current intensity and resistance).

6- The Ammeter is used to measure..... in the electric circuit.

(The potential difference – the current intensity – the resistance)

7- The unit of measuring the electric resistance is (Ampere – Volt – Ohm)

8- The unit of measuring the current intensity is (Ampere – Volt – Ohm)

9- The direct current is used in (Lighting – electric paint – operating refrigerators)

11-One of the properties of the alternating current is

(Has constant value – change direction – used in electric paint)

12- The radioactive phenomenon was discovered by the scientist.....

(Ohm – Becquerel – Ampere)

13- The effects of radiation is a result of changing the sex chromosomes of the cells.

(Physical – genetic– cellular)

14- Human beings should not be exposed to radiation in amounts more than rem.

(5 - 8 - 10)

15- is a nonradioactive element (radium – uranium – iron)

16-.The measuring unit of absorption radiation is (Curie – rem – roentgen)

2) Writ the scientific term :

1- The flow of electric charges in a conductor.

2- The electric current of fixed intensity and direction

3- The obstruction the electric current during its flow in the conductor.

4- The flow of electric negative charges in a conducting element (metal wire).

5- The amount of electric charges that flow through a conductor in a certain time.

6- The process of spontaneous conversion of atoms of some elements present in nature to reach a more stability

7- The radiation and nuclear energy emitted during nuclear reactions that can be controlled and carried out at nuclear reactors.

8- The atoms of radioactive elements that contain the same number of protons and have different number of neutrons.

9- The changes that take place to the living organism due to its exposure to radiations.

- 10- The measuring unit of absorbed radiation.
- 11- The flow of electric charges in a conductor.
- 12- The resistance of a conductor that allows the passing of an electric current of 1 Ampere through it when the potential difference between its two ends is 1 Volt.
- 13- The intensity of the electric current flowing in an electric circuit when an electric charge of 1 Coulomb passes within the conductor's cross section in 1 second.
- 14- The device used to measure the intensity of the electric current passing in a conductor.
- 15- The electric state of a conductor that shows the transference of electricity from and to it.
- 16- The measurement unit of the electromotive force of the electric cell.
- 17- The measuring unit of the absorbed radiation.
- 18- The natural conversion of the atoms of some elements in nature as an attempt to reach a more stable composition.
- 19- The flow of electric negative charges in a conducting material (metal wire).
- 20- A device used to measure the electric current intensity.
- 21- The work done to transfer unit of electric charge between two ends of a conductor.
- 22- The opposition to the flow of electric current in the conductor.
- 23- The potential difference across the two poles of the battery when the circuit is opened
- 24- The electric current of constant intensity and direction.
- 25- A type of connection of electric cells used to obtain high e.m.f.
- 26- The process of conversion of atoms of some elements to reach more stability.
- 27- The changes that take place to the living organism due to its exposure to radiations.

3) Problems:

- 1- Calculate the potential difference of the two ends of a vacuum cleaner whose resistance is 22 Ohm and the current intensity passing through it is 10 Ampere.
- 2- You have three similar cells, the electromotive force of each is 1.5 volt, explain by using a diagram how you can connect them to obtain an e.m.f of:
 - 1) 1.5 volts
 - 2) 3 volts
 - 3) 4.5 volts
- 3- You have 4 similar electric cells. The potential difference of each one is 1.5 Volt. Illustrate by drawing how you connect them to get batteries of emf of:
 - A- 6 Volt.
 - B- 4.5 Volt.
 - C- 3 Volt in two ways.
 - D- 1.5 Volt.
- 4- You have four electric cells each of e.m.f 1.2 volt. Show by drawing the method of connecting them to obtain each of the following:
 - A) 1.2 volt
 - B) 4.8 volt
 - c) 2.4 volt
- 5- If the potential difference between the terminals of a conductor is 6 volts, and the electric current of intensity 0.5 ampere is passed through it. Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of 12 volts.
- 6- Calculate the quantity of electricity that pass through a conductor of resistance 1000 ohms for 30 minutes, given the potential difference between its two terminals is 220 volts.

7- Calculate the potential difference between two points if the work done to transfer a charge of 600 coulomb is 6600 joule.

4) Complete the following statements:

- 1-is measured by using the Voltmeter and has a measuring unit known as.....
- 2- The is used to measure the electromotive force of a battery in units known as.....
- 3- While connecting charged conductors, the electric current passes from the conductor have..... potential to the conductor have potential.
- 4 - The electric current generated from a dynamo is due to converting energy to..... energy.
- 5- Cell produce current while the dynamo produces..... current.
- 6- There are two types of electric current.....and.....
- 7- The current intensity due to the flow of 2700 coulomb in 300 second through a cross-section of a conductor equals
- 8- In the electric circuits, the ammeter is connected in, while the voltmeter is
- 9- Volt = $\frac{\text{joule}}{\text{.....} \times \text{second}}$
- 10- There are two types of electric current which are and
- 11- The electric current can be transported only to short distance.
- 12- There are two methods of connecting electric cells which are and.....
- 13-, and cesium are natural radioactive elements.
- 14- Nuclear energy is used in medicine in and of some diseases.

12) Give reasons:

- 1- It is better to use the alternating current rather than the direct current.
- 2- The voltmeter is connected to both poles of the battery in the electric circuit
- 3-The areas chosen for storing radioactive wastes should be stable.
- 4- Radiation has genetic effects.
- 5- After the Chernobyl accident, radioactive isotopes were found in the food products.
- 6- Magnesium can replace copper in its salt solutions, while opposite cannot happen.
- 7- Some elements are called radioactive elements.
- 8- The voltmeter is connected across the two poles of a battery.
- 9- Rheostat is used in some electric circuits.
- 10- Voltmeter is connected between the two ends of a conductor.
- 11- It is better to use alternating current rather than direct current.
- 12- Some cells are connected in the electric circuit in parallel.
- 13- The nuclei of radioactive elements are unstable.
- 14- Radioactivity has natural sources and also artificial.

1) Choose the correct answer:-

- 1- The hormone releases the needed energy from the food stuffs:
a) Growth b) estrogen c) thyroxin
- 2- Thehormone releases the needed energy from the food stuffs
a) growth b) estrogen c) thyroxin
- 3- The hormone responsible for producing secondary sexual male characteristics is the hormone.
a) Progesterone b) testosterone c) adrenalin
- 4- The hormone which stimulates the storage of glucose sugar in liver is the:
a) Insulin b) estrogen c) thyroxin d) parathormone
- 5- The two factors of the hereditary trait are similar in the individual:
a) Pure b) hybrid c) recessive d) Pure and recessive
- 1- Mendel conducted his experiments in pea plant by using pairs of traits.
a) 5 b) 7 c) 9 d) 11
- 3- The two factors of a hereditary trait are similar in the individual.
a) pure b) hybrid c) recessive d) a and c
- 4- Which one of these traits is recessive in humans
a) curly hair b) wide eyes c) free ear lobe d) straight hair
- 5- put the model of DNA molecule.
a) Ohm b) Mendel c) Watson d) Johansson
- 6- is the part of DNA in the cell nucleus.
a) Gene b) Gamete c) Cytoplasm d) no correct answer
- 7- DNA molecule consists of strands.
a) two b) three c) four d) five
- 8- The mice don't have melanin pigment.
a) grey b) white c) black d) brown
- 9- The hormone which regulates the level of calcium in the blood is thehormone.
a) calcitonin b) thyroxin c) progesterone d) adrenalin
- 10- Thehormone liberates the needed energy from the food stuff.
a) growth b) estrogen c) thyroxin d) testosterone
- 11- Glucagon hormone is secreted by
a) pituitary gland b) thyroid gland c) adrenal gland d) pancreas

2) Mendel placed a group of assumptions to explain the appearance of the dominant trait and the disappearance of the recessive trait in the first generation in the experiments that he carried with the pea plant. Explain these assumptions.

3) Writ the scientific term:

- 1- Parts of the DNA that are present on the chromosomes and carry the hereditary traits of the individual.
- 2- Change in the nature of the hereditary factors that control the traits of the living organism, which results in a change in the traits of this living organism.
- 3- Mechanism with which hormone works inside the human body.
- 4- The changes that take place to the living organism due to its exposure to radiations.
- 5- A science that researches the transmission of the hereditary traits from one

generation to another by the studying the similarity and difference between the parents and the offspring.

- 6- The characters ready to be transmitted from one generation to another.
- 7- The trait that appears in all individuals of the first generation in Mendel's experiments.
- 8- The appearance of a hereditary trait in the individuals of the first generation when two individuals copulate and one of them is carrying a pure hereditary trait contrasting the trait carried by the other individual.
- 9- It is chemically consisted of a nucleic acid called DNA connected with protein.
- 10- They are parts of DNA on the chromosomes and control the hereditary traits of the individual.
- 11- A disease caused by the increase of thyroxin hormone after the adulthood.
- 12- The traits that are not transmitted from one generation to another.
- 13- A gland that secretes a hormone that regulates the growth of the human sexual organs.
- 14- A chemical message that controls and regulates the activities and functions of most of the body organs.
- 15- Organs secreting hormones in the human body.
- 16- Mechanism with which hormones work to achieve the homeostasis balance in the human body.
- 17- The result when one of the endocrine glands does not work properly.
- 18- The traits ready to be transmitted from one generation to another. (.....)
- 20- The trait that appears in all individuals of the first generation in Mendel's experiments. (.....)
- 21- The hereditary factors which transmit traits from the parents to off spring. (.....)
- 22- Through which the hereditary traits are transmitted from parents to offspring. (.....)
- 23- Parts of DNA that are present on the chromosomes and carry the hereditary traits of the individual. (.....)
- 24- It is chemically consisted of a nucleic acid called DNA combined with protein. (.....)
- 25- The mutations which are controlled by human to obtain desirable traits in specific living organisms and specially in the plants. (.....)
- 26- Organs secreting hormones in the human body. (.....)
- 27- A chemical message that controls and regulates the activities and functions of most of the body organs (.....)
- 28- Hormone which stimulates the storage of glucose sugar level in the blood. (.....)
- 29- The result when one of the endocrine glands does not act properly. (.....)
- 30- A chemical message that controls and regulates the activities and functions of most of the body organs. (.....)
- 31- Organs secreting hormones in the human body. (.....)

4) Draw a fully labeled diagram showing the relation between the secretion of the thyroid stimulating hormone and thyroxin hormone.

5) Compare between:

- 1- The spontaneous mutation and the induced mutation.
- 2- Connection in series and in parallel.
- 3- Homogenous and non-homogenous solutions.
- 4- The dominant trait and the recessive one with giving examples.
- 5- The inherited traits and the acquired traits

6) Complete the following statements:

- 1- Dwarfism is a disease caused by the decrease of the secretion of..... hormone at the childhood.
- 2- Thehormone is secreted when the rate of glucose sugar increases in the blood.
- 3- When the amount of glucose decreases in blood, pancreas secretes..... hormone
- 4- Hormones are directly secreted into the blood stream by.....
- 5- Thyroxin is athat regulates food assimilation in your body
- 6- When the secretion of the growth hormone decreases at the childhood, Man is infected by.....
- 7- traits are not transmitted from one generation to another.
- 8- The scientist is the founder of heredity, he used the seeds of plant, because its flowers are and thus it can self-pollinated.
- 9- The trait that appears in all individuals of the first generation in Mendel's experiments is trait.
- 10- Chromosome is chemically composed of a nucleic acid called which is combined with
- 11- The two scientists and were able to make a model for DNA molecule.
- 12- In DNA molecule, the nitrogenous base, Guanine pairs with base.
- 13- The gene mutation occurs as a result of the change in the sequence of of the gene.
- 14- Hormones are directly secreted into the blood stream by
- 15- gland secretes hormone which controls the general growth of the body.
- 16- Thyroxin is a that regulates food assimilation in your body.

7) Put a (✓) or (✗) in front of the following statements and correct the underline words:

- 1- Feedback is the mechanism with which hormones work in the human body. ()
- 2- The dynamo produces alternating electric current. ()
- 3- The genetic mutation occurs as a result of the change in the sequence of nitrogenous bases of the gene. ()
- 1- Genes are parts of DNA found in the cytoplasm of the cell. ()
- 2- Mutation in the somatic cells is transmitted to offspring. ()
- 3- The glucagon is secreted by pituitary gland. ()

4- Thyroid secretes a hormone that organizes the growth and development of sexual organs in the human body. ()

8) Give reasons:

- 1- Mendel removed the stamens from the flowers of the plants.
- 2- Some mutations don't be transmitted from one generation to another.
- 3- The height of some persons may reach 3 meters.
- 4- The two adrenal glands have an important role when Man is exposed to emergency.
- 5- Pancreas is a double-function gland.
- 6- Mendel selected the pea plant to conduct his experiments.
- 7- Learn to walk in children is not considered a genetic trait.
- 8- Pituitary is called the “master gland”.
- 9- Mendel selected (choose) the pea plant to conduct his experiments.
- 10- The curly hair dominates the smooth hair trait.
- 11- The ability of rolling the tongue is dominant trait in the human being.
- 12- The free ear lobe is dominant over the attached ear lobe.
- 13- DNA molecule is called the double helix.
- 14- Some mutations are not transmitted from a generation to another.
- 15- We must not be exposed to radiation as x-rays.
- 16- Blood stream is the only way for hormones to reach their sites of action.
- 17- Pituitary gland is called the master gland.
- 18- The stopping of the body growth, so the person becomes a dwarf.
- 19- Pancreas is a double function gland.
- 20- Diabetes disease is treated with insulin hormone.

9) Explain the following:

- 1- Mendel's selecting the pea plant to conduct his experiments.
- 2- When a pure yellow pod pea plant is pollinated with a pure green pod pea plant, it produces plants that are all with green pods.
- 3- The ability of bending the tongue is a dominant trait in the human being
- 4- An experiment to explain the law of independent assortment of the hereditary factors.
- 5- The model of Watson and Creek of the DNA structure
- 6- How the genes perform their functions.
- 7-When you pollinate a pure long stem pea plant with a short stem pea plant, it produces plants all are long stems.
- 8- The separate ear lobe is dominant over the adhered ear lobe.

10) The figure in front of you illustrates the mixed pollination between the flowers of the short pea plant and another long, determine:

- A- The individuals of the first generation.
- B- Complete the missing individuals of the second generation and describe the individuals of the second generation.
- C- Use symbols while expressing in the previous experiment.